DOCUMENT RESUME

ED 331 426 HE 024 488

AUTHOR	Khalil, Edna M., Ed.
TITLE	Graduate Education--The Social Context. Proceedings of the Annual Meeting of the Council of Graduate Schools in the United States (26th, San Antonio, Texas, December 2-5, 1986).
INSTITUTION	Council of Graduate Schools in the U.S., Washington, D.C.
PUB DATE	87
NOTE	162p.
AVAILABLE FROM	Council of Graduate Schools of the U.S., One Dupont Circle, N.W., Suite 430, Washington, DC 20036-1173.
PUB TYPE	Collected Works - Conference Proceedings (021)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	Academic Deans; College Administration; Doctoral Dissertations; *Educational Practices; Electronic Publishing; Engineering Education; Financial Support; Graduate Students; *Graduate Study; Higher Education; Information Networks; International Educational Exchange; Masters Theses; Minority Groups; Scholarship; *Social Influences; Student Financial Aid; Student Recruitment; Teacher Education; Telecommunications
IDENTIFIERS	China; *Council of Graduate Schools; Latin America

ABSTRACT

This report of the proceedings of a meeting on graduate education in the United States contains papers from plenary and concurrent sessions, information on the Council of Graduate Schools' (CGS) business meeting, copies of the CGS constitution and bylaws, CGS list of member institutions, and accounts of award presentations. Papers have the following titles and authors: "Problems of Research at Master's Level Institutions" (Linda Mantel); "Encouraging Scholarship by the Graduate Faculty" (Michael L. Mark); "Report from Washington Agencies: Issues and Opportunities" (Sara S. Chapman); "The Graduate Dean in University Administration: Changing Roles and Responsibilities" (Anne Clark and others); "Dissertations and Theses: Roles in Graduate Education" (Leila S. Edwards and others); "Graduate Education for Teachers" (Dean Corrigan); "Tell Me What Is Your Specialty?" (John Ziman); "Graduate Engineering for Minorities Program (GEM)" (Martha Conley); "The Talent Pool for 1990 and Beyond" (Betty M. Vetter); "Minority Graduate Education: Models and Successes" (Sarita E. Brown); "Minority Recruitment in Physics at M.I.T." (George Koster); "What Scholars Think about Scholarly Communication" (Herbert C. Morton); "The Electronic Scholar" (Patricia Battin); "Electronic Publication: Its Impact on Scholarship" (Adam Hodgkin); "International Educational Exchange: The Case of China" (David M. Lampton); "Latin Americanist Perspective on the Fulbright Program" (C. W. Minkel); "Perspectives on Research Funding" (Charles L. Hosler; Karen Hiiemae); "Perspectives on Research Funding--The Private Sector" (Kenneth L. Hoving); "Graduate Student Financial Aid" (Sheila Cooper and others). (LPT)

ED331426

Proceedings of the Twenty-Sixth Annual Meeting

COUNCIL OF GRADUATE SCHOOLS IN THE UNITED STATES

THEME

GRADUATE EDUCATION—
The Social Context

December 2–5, 1986
Hilton Palacio del Rio
San Antonio, Texas

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COUNCIL OF GRADUATE SCHOOLS IN THE UNITED STATES

THEME

GRADUATE EDUCATION—
The Social Context

December 2–5, 1986
Hilton Palacio del Rio
San Antonio, Texas

edited by Edna M. Khalil

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THE COUNCIL OF GRADUATE SCHOOLS IN THE UNITED STATES

26TH ANNUAL MEETING

PROGRAM

Tuesday, December 2, 1986

CGS ANNUAL PRE-MEETING WORKSHOPS

Coordinator of Workshops: Eric Rude, *Associate Dean of the Graduate School, University of Wisconsin-Madison*

Graduate Information Systems
This workshop will address issues involved in the selection of microcomputers, including hardware, software, and personnel. The use of micros for recordkeeping, degree audits, data analysis and networking will be discussed.

Faculty:
Terry Mikiten, University of Texas Graduate School of Biomedical Sciences at San Antonio
Dale Comstock, Central Washington University
Christopher Oberg, Claremont Graduate School
Peter Syverson, Council of Graduate Schools

Program Review and Evaluation
This workshop will review policies and procedures for graduate program evaluation. Panelists will examine procedures used at institutions granting only master's degrees, as well as those offering master's and doctoral programs.

Faculty:
Larry Williams, Eastern Illinois University
Bryant Stamford, University of Louisville
George Woodyard, University of Kansas

Legal Issues in Graduate Education
This workshop will examine legal issues for the graduate dean, concentrating on due process, credentials fraud and plagiarism.

Faculty:
Scott Chafin, University Counsel, University of Houston System

PRE-MEETING SATELLITE SESSIONS

I. Current Issues in Graduate Education in Biomedical and Health Science Institutions

Research Funding for the Biomedical Sciences
Moderator: Armand J. Guarino, Professor of Biochemistry, University of Texas Graduate School of Biomedical Sciences at San Antonio

A. Funding Prospects at the National Institutes of Health
Jerome G. Green, Director, Division of Research Grants, National Institutes of Health

B. The University-Industry Interface
William B. Neaves, Dean, University of Texas Southwestern Graduate School of Biomedical Sciences, University of Texas Health Science Center at Dallas

C. Indirect Costs. What's the Problem?
X. J. Musacchia, Associate Provost for Research and Dean of the Graduate School, University of Louisville

Graduate Education Issues in the Health Sciences
Moderator: J. Palmer Saunders, Dean, University of Texas Graduate School of Biomedical Sciences at Galveston

A. Practice-Oriented Degree Programs in Health Sciences
William O. Berndt, Dean for Graduate Studies and Research, University of Nebraska Medical Center, Omaha

B. Can a Graduate School Operate Autonomously on a Health Science Campus: Or, How Do You Handle a 900 lb. Gorilla?
Kenneth J. Roozen, Dean and Co-Director, Graduate School, University of Alabama at Birmingham

C. Post-Doctoral Fellows in the Health Sciences
Lloyd M. Kozloff, Dean of the Graduate Division, University of California at San Francisco

II. Current Issues in Graduate Education in Master's Only Institutions
Moderators: Helen Cairns, Dean of Graduate Studies and Research, Queens College of the City University of New York
W. Ray Ellis, Dean of the Graduate School, Hardin-Simmons University

Speakers: Michael E. Austin, Dean for Graduate Studies and Research, University of Texas at El Paso

Richard E. Wylie, Vice President and Dean of the Graduate School, Lesley College

Linda H. Mantel, Assistant Provost for Graduate Studies and Research, City College of the City University of New York

Michael L. Mark, Dean of the Graduate School, Towson State University

III. Report from Washington Agencies: Issues and Opportunities

Moderator: Paul Jones, Associate Dean, Graduate School, University of Louisville, and CGS Dean in Residence

Speakers: Sara S. Chapman, Assistant Director, Division of Education Programs, National Endowment for the Humanities

Jerome G. Green, Director, Division of Research Grants, National Institutes of Health

James Hoehn, Senior Science Research Analyst, Division of Science Resources Studies, National Science Foundation

WEDNESDAY, DECEMBER 3, 1986

9:00 a.m.

Welcome and Introduction

Plenary Session I

The Graduate Dean in University Administration: Changing Roles and Responsibilities

Sister Anne Clark, Dean of Graduate Studies, College of St. Rose

John H. D'Arms, Dean of the Graduate School, University of Michigan

Edward N. Wilson, Dean of Graduate School of Arts and Sciences, Washington University

Gene L. Woodruff, Vice Provost for Research and Dean of Graduate School, University of Washington

Presiding

Jules B. LaPidus, President, Council of Graduate Schools

10:45 a.m.—12 Noon

Concurrent Sessions

1. Dissertations and Theses: Roles in Graduate Education

Leila S. Edwards, Associate Dean of Graduate School, Northwestern University

G. Philip Manire, Vice Chancellor and Dean of Graduate School, University of North Carolina at Chapel Hill

Serena Stanford, Interim Associate Academic Vice President of Graduate Studies, San Jose State University

Presiding
Gillian Lindt, Dean of Graduate School of Arts and Sciences, Columbia University

2. Graduate Education for Teachers
Dean Corrigan, Dean of the College of Education, Texas A&M University
Patricia Shell, Superintendent, Brazosport Independent School District, Freeport, Texas

Presiding
Mary Ann Carroll, Dean of School of Graduate Studies and Director of Research, Indiana State University

3. University-Industry Education Connections
Richard Kennedy, Manager of Management Education and Corporate Conferences, General Electric
Robert W. Desio, University Relations, International Business Machines
James White, Director, Technology and Engineering Systems, University of Maryland Graduate School, University College

Presiding
Milton A. Grodsky, Dean of Graduate Studies, University of Maryland Graduate School, University College

12 Noon
Luncheon
Celebrating the 40th Anniversary of the Fulbright Program

An Address by Professor John Ziman, Imperial College of Science and Technology, London
Tell Me What Is Your Specialty?

Presiding
Jules B. LaPidus, President, Council of Graduate Schools

2:00–3:15 p.m.
Plenary Session II
Minorities: Successes and Prospects for the Future

Martha Conley, Coordinator of Student Programs, National Consortium, GEM Program, Notre Dame, Indiana
Betty M. Vetter, Executive Director, Commission on Professionals in Science and Technology, Washington, D.C.
Sarita E. Brown, Assistant to the Dean and Director, Graduate Opportunity Program, University of Texas at Austin
George Koster, Professor of Physics, Massachusetts Institute of Technology

Presiding
John B. Turner, Assistant Provost and Associate Dean of Graduate School, Massachusetts Institute of Technology

3:45–5:00 p.m.
Plenary Session III

Report from Washington

John F. Jonas, Of Counsel, Patton, Boggs & Blow, Washington, D.C.
Howard J. Silver, Associate Director for Government Relations, Consortium of Social Science Associations, Washington, D.C.
John C. Vaughn, Senior Federal Relations Officer, Association of American Universities

Presiding
Thomas J. Linney, Jr., Director of Government and Association Relations, Council of Graduate Schools

THURSDAY, DECEMBER 4, 1986

9:00 a.m.
Plenary Session IV cancelled

10:30 a.m.
Plenary Session V
Technology and Scholarly Communication

Herbert C. Morton, Director, American Council of Learned Societies, Office of Scholarly Communication
What Scholars Think
Charles T. Cullen, President, The Newberry Library
Network for Scholars
Patricia Battin, Vice President and University Librarian, Columbia University
The Electronic Scholar
Adam Hodgkin, Director of Electronic Publishing, Oxford University Press
Electronic Publication: Its Impact on Scholarship

Presiding
David S. Sparks, Vice President for Graduate Studies and Research, University of Maryland

12 Noon
Luncheon
Presentation of Awards

Gustave O. Arlt Award in the Humanities

Presented by
Gillian Lindt, Dean, Graduate School of Arts and Sciences, Columbia University

CGS/ University Microfilms International Distinguished Dissertation Award
Presented by
Richard Attiyeh, Dean of Graduate Studies and Research, University of California, San Diego

Presiding
Lee B. Jones, Dean of the Graduate College, Executive Vice President and Provost, University of Nebraska

2:00–3:15 p.m.
Plenary Session VI
Current Issues in Graduate Education and Research in the Social Sciences

Professor John Ziman, Imperial College of Science and Technology, London
Development of Science Policy in the United Kingdom

Responding Panel
Paul Albrecht, Executive Vice President and Executive Dean, The Claremont Graduate School
W. Dexter Whitehead, Dean of the Graduate School of Arts and Sciences, University of Virginia
Brian L. Foster, Dean of the Graduate College, Arizona State University
Madelyn Lockhart, Dean of Graduate Studies, University of Florida
Leslie McLemore, Dean of the Graduate School and Director of Research Administration, Jackson State University
Mary G. Powers, Dean of Graduate School of Arts and Sciences and Liberal Arts and Sciences Faculty, Fordham University

Presiding
Vivian A. Vidoli, Dean, Division of Graduate Studies and Research, California State University, Fresno

3:45–5:00 p.m.
Concurrent Sessions

4. The Master's Degree
Robert T. Holt, Dean of the Graduate School, University of Minnesota, and members of the CGS Task Force on the Master's Degree

5. International Educational Exchange: The American Scholar Abroad
David M. Lampton, Professor of Political Science, Ohio State University
C. W. Minkel, Vice Provost and Dean of the Graduate School, University of Tennessee at Knoxville

Presiding
William H. Macmillan, Dean of the Graduate School, University of Alabama

6. Perspectives on Research Funding
Charles L. Hosler, Vice President for Research and Dean of the Graduate School, Pennsylvania State University
Karen Hiiemae, Vice President for Research and Graduate Studies, Syracuse University
Kenneth L. Hoving, Dean and Vice Provost for Research Administration, University of Oklahoma

Presiding
John P. Schaefer, President, Research Corporation, Tucson, Arizona

FRIDAY, DECEMBER 5, 1986

9:00 a.m.
Plenary Session VII
Graduate Student Financial Aid

Sheila Cooper, Special Assistant to the Dean, Indiana University
Patricia A. McWade, Assistant Dean for Admissions and Financial Aid, Harvard University
Dwight Horch, Director of College and University Programs, Educational Testing Service

Presiding
Allen Sanderson, Assistant Provost, The University of Chicago

10:45–12 Noon
Business Meeting

Chairman's Report
Lee B. Jones, Dean of Graduate College, Executive Vice President and Provost, University of Nebraska

President's Report
Jules B. LaPidus, President, Council of Graduate Schools in the U.S.

Resolutions
Other Business

Presiding
Lee B. Jones, Dean of Graduate College, Executive Vice President and Provost, University of Nebraska

12 Noon
Adjournment

Pre-Meeting Satellite Sessions

Tuesday, December 2, 1986

CURRENT ISSUES IN GRADUATE EDUCATION IN MASTER'S ONLY INSTITUTIONS

Moderators: Helen Cairns, *Dean of Graduate Studies and Research, Queens College of the City University of New York*
W. Ray Ellis, *Dean of the Graduate School, Hardin-Simmons University*
Speakers: Linda H. Mantel, *Assistant Provost for Graduate Studies and Research, City College of the City University of New York*
Michael L. Mark, *Dean of the Graduate School, Towson State University*

Linda H. Mantel

Problems of Research at Master's Level Institutions

In these times of increased attention to teaching at universities, one can profitably consider research, in addition to its own worth, as contributing to improvements in the instructional capability of the institution. I see the requirements for promoting research and scholarly activity at master's institutions as falling into three categories: 1) *motivating people*, be they administration, faculty, or students; 2) *providing things*, including supplies, equipment, and an appropriate physical plant; and 3) *providing time and its equivalent, money*, for the work to be carried out. I will try to identify some of the problem areas, and some possible solutions that have worked in some cases; I hope that as a group we will be able to develop other types of solutions.

First, to put the situation into perspective, I will provide a brief description of the combination centralized Ph.D.-decentralized master's programs at CUNY. All doctoral students are registered at the Graduate School, (known at CUNY as "42nd Street"), and Ph.D. degrees are awarded by the Graduate School of CUNY. Students in humanities, arts, social science, and some other special fields take their classes and seminars at the Graduate School. In science, students are resident for most of their classes and all of their laboratory work on the various senior college campuses—Brooklyn, City, Hunter, Lehman, Queens. Ph.D. students in engineering take all their work at City College. Doctoral faculty include a mix of people on central lines and campus lines. In science, many of the courses taught on the campuses are taken by both master's and Ph.D. students. Master's degrees are awarded by the campuses, although the Graduate School does have several free-standing master's programs as well. Thus on a campus like City, where doctoral students are in residence and doctoral research

is carried out, encouragement of research among the science and engineering faculty in particular is not difficult. However, for those departments in which participation in doctoral education is more marginal, the impetus to carry out research is not as strong. Thus the situation among our arts and humanities faculty is probably not too different from that at other institutions which do not have doctoral programs. What are the important components of research development in such institutions?

People come first. The administrative commitment to promotion and reward of research activities is central to a successful effort. Both the president and the chief academic officer need publicly to state that they support faculty research and scholarship and will back up that support with time = money. For new faculty, if research is to be considered as part of the criteria for tenure and promotion, this fact must be made very clear.

Part of this commitment involves an assessment of the institutional image—do faculty consider themselves to be part of a teaching institution, rather than of a research institution? Master's programs of quality require a research experience; without faculty models and mentors the students will be short-changed. One administrative tool to enhance the status of research is the establishment of an office of research development, headed by a person (or a small committee) charged with active furthering of research and scholarly efforts. The functions of this office could include dissemination of information on opportunities for outside support, development of workshops in grant writing, working with the library to develop capabilities for literature searches, promotion of research visibility on campus with Research Day events, and establishment of awards or honors for successful faculty scholars.

A major problem in promoting research activities is often that of motivating established, senior, full-time faculty to undertake new commitments for which they feel they will be insufficiently rewarded. Nor are any discentives apparent if such activities are not undertaken—in a word, neither carrot nor stick is evident. Incentives that may be useful include released time, merit pay, summer salary, or travel funds for attending professional meetings. In the end, however, faculty will continue the scholarly efforts that enabled them to be hired in the first place only if the effort satisfies an inner desire to continue creativity and development. Sometimes the presence of an extraordinary student facilitates this process and allows an interactive synergy to develop. Establishment of a "research atmosphere" among advanced undergraduates, through an honors or independent studies option, will help to develop the feeling within the institution that research is an activity carried out by students as part of their normal course of study.

Research requires space, supplies and equipment, and library resources. Again, the central commitment to assisting scholarly faculty by providing more office or laboratory space is essential. Adequate light, heat, temperature control for live materials, equipment, and computers are necessary, as well as funds and personnel for appropriate animal care, and maintenance of the physical plant. A

budgetary assignment to support these activities should help to signal the commitment of the administration to a serious research effort.

Funds for equipment for smaller institutions are available from the major granting agencies. The NSF programs in College Science Instrumentation, and Research in Undergraduate Institutions both provide support for research equipment. The NIH is about to begin a program for instrumentation in the $5000–60,000 range—a range very difficult to come by in most cases. The Department of Energy has surplus instrumentation available at very reasonable prices. Often local industry will provide computers and other equipment to a university.

Finally, the last element, time = money. It is difficult for a faculty member teaching a full 12-hour per term load to consider taking on a research component and supervision of graduate students on top of everything else. If a department is able to make available release time for scholars, that is most desirable. If the institutional rules permit, return of some indirect costs to the school, department, or investigator can help to pay either for substitute teaching or for research assistance. If a faculty member applies for an outside research grant, the budget should include some release time to carry out the work, in addition to a summer salary. Some departments are able to supply a research assistant from internal funds to work with the faculty member.

What kinds of funding opportunities are available for researchers from smaller schools? Most of the major agencies have special initiatives to develop research at non-doctoral institutions. The National Science Foundation has its Research in Undergraduate Institutions Program (RUI), for which master's level institutions are also eligible. Funds for individual researchers are distributed through the regular NSF programs but are reviewed under separate guidelines. In addition, this year they have started new programs for women and minorities, including Research Planning Grants, Research Initiation Grants, and Career Advancement Awards, to support investigators at several stages of their careers. In addition, Research Opportunity Awards are available, in which a faculty member spends some time working with an investigator at another institution who already has an NSF grant. At the National Institutes of Health, the Small Grants program provides awards of $20,000 (with a very fast review turn-around) for new projects to support a beginning investigator or to encourage an established investigator to pursue a change of field. The AREA (Academic Research Enhancement Award) program is designed specifically for small institutions that do not have doctoral programs but which turn out a certain number of majors in biological and health fields. The FIRST (First Independent Research Support and Transition) award is designed to provide long-term support for a beginning investigator of great promise.

How does one keep up with these opportunities?—with subscriptions to grant advisory newsletters, the mailing lists of the major agencies, corporate and foundation newsletters, and by attending local and national conferences of organizations such as the National Council of University Research Administrators (NCURA) or the Society of Research Administrators (SRA).

In summary, the central issues of research revolve around attitude and commitment; time, things, and money. Research can be identified as a component of improved classroom teaching, as well as a component of individual faculty development. It can be a tool for attracting superior graduate students. Raising the research profile of an institution requires a commitment of people to pursue funding opportunities, dissemination of information, and enhancing the position and visibility of scholars on campus. These goals can be accomplished in many ways, starting with small programs and increasing commitments as time and funds permit. Although the first steps may be difficult, faculty support is likely to grow and facilitate further development of the program. Clearly, these activities cost time and money, but the investment is necessary to provide support for the desired outcome—an increase in research and scholarly activity.

Michael L. Mark

Encouraging Scholarship By The Graduate Faculty

Definition of Scholarship in the Context of the Graduate School Management Plan

Because most of our institutions do not have research faculties, at least in the sense of the major research universities, we have to be careful that we do not define "scholarship" so narrowly as to exclude large segments of our faculties from scholarly activities. For example, many of our faculty members will never publish research findings in the major research journals of their disciplines, nor will they publish the definitive books that are considered landmarks. They won't win prizes for important scientific investigations or literary interpretations. On the other hand, these things are often done at master's only institutions because most of us have some faculty members to whom such scholarship is important, and who are capable of conducting it.

The fact that many of us have "stars" on our campuses should not make us overlook the capabilities of the other faculty members who are more oriented to classroom teaching. They should know that some scholarly production is expected of them. It will not necessarily appear in journals, books or by presentations of papers. Their scholarship can, and should be, evident in the way they structure and conduct their courses. All faculty members have an obligation to be familiar with the current state of knowledge in their disciplines. At the very least, they should be expected to incorporate the research of others in their courses. Some faculty are in disciplines for which creative activity is appropriate. Leadership in the arts through the creation and production of art is considered to be scholarship in the context of this paper. So is professional leadership, as demonstrated by service to professional organizations that results

in important service to the profession. The word "important" should be emphasized.

Identification of the Problem: Scholarship Is Often Lacking

We all have faculty of long standing who have always considered scholarly activity part of their obligation to the university, their students and themselves, and have participated in it with enthusiasm and love of learning. Unfortunately, we all know that many of our faculty members consider themselves to be teachers, with no obligation to pursue their subjects beyond the classroom. This is changing, fortunately, because so many new faculty who have the qualifications for membership on the faculties of research universities are being hired by master's only institutions. In the last five years at Towson State University we have seen almost a complete reversal. Tenure and promotion are now granted only to faculty who have proven themselves not only to be effective teachers, but also respected scholars whose credentials are beyond question. In many cases they serve as role models for the older faculty, some of whom have also become involved in scholarship. Nevertheless, many of our faculty members are not involved in scholarship, even to the extent of keeping their courses updated on the basis of current research.

Resources Available to the Graduate School to Promote Scholarship

As we all know, the graduate dean has to have the ability to persuade people to accept his or her beliefs. Most of us do not have direct authority over faculty, nor do we have sufficient budgets to promote what we believe to be important in graduate education. Maybe this is an advantage because when we do achieve something it is because people believe in what we have brought about, and it must be so well-planned that the chance of success is high. It would be nice to have the budgetary and personnel resources to carry out our projects quickly and easily, but graduate deans who have been in office for a number of years with a solid record of accomplishment have learned to combine idealism with pragmatism, and have provided leadership in a way that conveys both qualities effectively.

If the encouragement of scholarship by the faculty is a priority of the graduate dean, he or she has a few tools to achieve the task other than persuasiveness. A thorough review of the resources and areas of responsibility of the Graduate School will reveal what tools are available.

The Towson State University Graduate School Management Plan

Traditionally, we have distributed the resources of the Graduate School equally among the various programs. Each program was assigned one graduate assistant. If funds were available, the programs could request an extra assistant.

The funds available to me for fellowships were distributed to graduate students on the basis of grade point average and faculty recommendation. Theoretically, all of the recipients of fellowships could be from one department. Publicity and student recruitment were done on the basis of equality for all programs. Advertising for specific programs has been the responsibility of the department although they have little money for it.

During the course of developing a long-range management plan for the Graduate School, it was realized that the equal distribution of our scarce resources was probably not the best way to use them. Instead, they should be considered incentives for the faculty who desire to have them, which includes just about all of the graduate faculty. The management plan included new ways to deal with ten responsibilities of the Graduate School. We built incentives for faculty scholarship into several of them. Beginning with the next academic year, it can no longer be assumed that the resources of the Graduate School will be distributed equally among all of the programs. Instead, criteria have been developed for making decisions about distribution.

Graduate Assistantships

In the future, priority will be given in the assignment of graduate assistants to faculty who will involve them in their research. For the first time, we will offer variable assistantships, meaning that we will no longer insist on only ten or twelve month assignments for 15 to 20 hours per week. Faculty will be able to request an assistant for a shorter period, or for the full period, but for fewer hours each week. The purpose is to meet the faculty member's research needs. By creating the variable assistantship, a greater number of students can be employed for the same amount of money, and more faculty members can benefit.

For the first time, we will call some assistants "research assistants." It will be an internal designation because the term is not recognized by our Board of Trustees. The position is expected to provide necessary support to faculty members who need it for their ongoing work, and, it is hoped, incentive to those who want to become involved in scholarly activities, and who might decide to do so if an assistant is provided to handle what they consider the mundane aspects of the work.

We will continue to support assistants in the traditional roles, that is, classroom assistance and office work, as much as possible. For the first year, we will assign approximately one-third of the assistantships for research support. In the second year, about half, and after that, from two thirds to three quarters. We will expect the assistantships to provide a more meaningful work experience for graduate assistants in the future than they do now, and to serve as an incentive for faculty to pursue scholarship. It is our hope that in the future, graduate assistants will not function as clerk-typists in the departments. Departments that do not qualify for graduate assistants under the new plan will have the option of employing student workers under the college work-study plan.

Dean's Fellowships

Currently, a specified amount of fellowship money is awarded each year to graduate students on the basis of grade point average and faculty recommendation. Normally, a GPA cut-off point is established, and all applicants at or above that level are awarded a fellowship, usually for the amount of one or two courses. The system is designed to encourage enrollment by students who have demonstrated the highest ability in academic work, and is not need-based. The purpose is to enroll as many high-caliber graduate students as possible at Towson State University.

Under the new plan, one of the criteria for awarding fellowships will be the scholarly production of the faculty. Each year, individual programs will be identified for priority in receiving the benefits of the Dean's Fellowships to raise the general level of student quality. Although fellowships will continue to be awarded in other programs, priority will be given to those identified each year for this purpose. Selection of programs will be based on such factors as enrollment trends, efforts by the faculty to attract students of the highest quality, departmental grading patterns over a several-year period, scholarly efforts of the faculty and the involvement of students in faculty research efforts.

Also, for the first time, the grade point average will not be the only factor that qualifies students for fellowships. Also recognized will be such factors as artistic achievement and clinical skills. In such cases, the faculty who recommend students will be expected to demonstrate intellectual leadership themselves through research, artistic efforts, clinical work, etc.

Publicity and Student Recruitment

The Graduate School develops an annual plan and budget for advertising graduate programs in conjunction with the Office of University Relations. Generally, we seek to publicize each program to an equal extent, though emphasis is occasionally given to a new program in its first or second year. We also send representatives to graduate and professional days to recruit students for all programs.

Although we will continue to work for all programs, we will set aside a portion of the budget for specific programs. The criteria for selecting those programs will include such factors as the need for more students, the ability of the program to actually draw more students than it does now, and whether the program can handle more students. In addition, we will review the department's recent scholarly efforts to select programs for priority treatment. We will be interested in the faculty's scholarly production in deciding whether to expend resources to gain new students for them, but the review will also include a determination of whether courses are kept current by incorporating, or at least recognizing, current research in the field. This will be done by interviewing faculty members and reviewing course syllabi. Only programs that do demon-

strate strength in this area will receive priority treatment in student recruitment. That treatment will include advertising in specialized journals and assistance in recruiting at professional meetings.

Assignment of Graduate Teaching Slots

The normal faculty teaching load at Towson is 12 credit hours. The load for graduate faculty is 9 credit hours. The Graduate School does an annual survey of scholarly production by graduate faculty members who teach 9 credits per semester. Although it has never been policy that scholarly production is required in exchange for the reduced load, that has gone along with the general change in attitude about scholarship throughout the university. Not all graduate faculty are productive, but at least those who aren't feel a little uncomfortable about it. In the near future, I hope that the reduced load will be awarded only to faculty who will use their time for scholarly purposes.

Because of fluctuations in enrollments, it is not unusual to shift graduate faculty slots between departments. Departments like to have the slots because of the opportunity for reduced teaching loads, and, in many cases, because additional time is provided for research. In the future, we will consider not only enrollment needs in assigning graduate slots, but faculty productivity as well. Those departments that can place productive scholars in graduate teaching slots will be assigned the slots.

Conclusion

The above plan is not expected to bring radical reform at Towson State University, but it will provide solid evidence of our priorities. We don't expect to punish those faculty who are not productive, but we will reward those who are. As new faculty are appointed in the future, the expectation of scholarship will be clearly embedded in our policies, and eventually, we hope that our new policies will make a difference.

Report from Washington Agencies: Issues and Opportunities

Moderator: Paul Jones, *Associate Dean, Graduate School, University of Louisville, and CGS Dean in Residence*
Speaker: Sara S. Chapman, *Assistant Director, Division of Education Programs, National Endowment for the Humanities*

Sara S. Chapman

Before talking specifically about the divisions and the grant-making programs of the National Endowment for the Humanities that will be of greatest interest to you, I want to speak briefly about the Endowment as a whole so that you may see how its work in support of the humanities is organized. The Endowment supports three kinds of activities: 1) Education, 2) Research, 3) Public Programming. Its educational objectives are served by the divisions of Education Programs and of Fellowships and Seminars, its research objectives by the divisions of Research Programs and of Fellowships and Seminars (through individual fellowship awards), and its public programming objectives by the divisions of General Programs and of State Programs.

The Office of Challenge Grants serves all kinds of institutions and thus supports all kinds of institutional objectives. Inevitably, the grant-making programs and even the divisions of the Endowment are somewhat arbitrary. A primary function of the staff is to help you find the category in which your good idea can be most competitive and then to help you, before an application deadline, to anticipate the questions that review panelists are likely to raise about your proposal. The Endowment staff will work with you to enable you to submit the strongest possible argument for Endowment support. It is essential to take advantage of this assistance. Not to do so may put your proposal at a competitive disadvantage.

The overarching aim of the grant-making categories in Division of Education Programs is to improve *teaching* in disciplines of the humanities in schools, colleges, and universities at *every* level. Grants are made to institutions, for institutional projects, rather than to individuals. For the past several years, the division has been organized in four programs: 1) Exemplary Projects in Undergraduate and Graduate Education, 2) Humanities Programs for Nontraditional Learners, 3) Central Disciplines in Undergraduate Education, and 4) Humanities Instruction in Elementary and Secondary Schools.

We expect these distinctions to disappear in the next iteration of the division's guidelines. However, the Endowment will continue to support all of the kinds of projects it now supports. The new guidelines will be even broader in their invitation to strong proposals in two programs: Higher Education and Elementary and Secondary Education.

In the last several years, the Endowment has given high priority to assisting faculty to establish or strengthen the central role of the humanities in undergraduate education. In reading recently a summary of Ernest Boyer's forthcoming book, *The Undergraduate Experience in America*, I was reminded of the urgency with which Mr. Boyer expresses values similar to the Endowment's: among other cases, he argues for the centrality of the liberal arts to *all* strong undergraduate programs. At the Endowment, this value translates to renewed faculty study of central texts and topics in the humanities and the need to assure that our students attain effective use of the English language first, prior to their study of the languages and literatures of other cultures. In the Division of Education Programs, then, the aim is to bring faculty (and through them, students) into direct contact with primary texts in the humanities.

I realize that, as graduate deans or other officers with responsibility for supporting faculty in research and post-baccalaureate teaching, you want to know how your graduate humanities faculty may attract Endowment support not only for their research and teaching in undergraduate programs, but for their work in graduate programs as well. I shall include a number of examples of current grants, several made expressly to support graduate programs.

In its quest to support the improvement of teaching in the humanities at every level, the Division of Education Programs is particularly interested in strong proposals to improve the initial preparation of teachers. Proposals may focus upon undergraduate or graduate instruction in the humanities. They may focus upon strengthening the undergraduate general studies curriculum in teacher preparation programs or upon preparing students to teach in a particular discipline of the humanities at the secondary or undergraduate level. Proposals may also intend to strengthen graduate curricula, particularly as faculty wish to focus the instruction of advanced graduate students more clearly upon their preparation to be creative teachers, as well as contributive scholars.

You may be interested to hear a sentence or two from a letter we received recently from the president of an outstanding liberal arts college: "Ever since William Arrowsmith's celebrated article on 'The Shame of the Graduate Schools' it has been widely recognized that most of the nation's new Ph.D.s enter the classroom with little or no supervised introduction to the art of teaching. Surely one of the most useful things the Endowment could do would be to contribute some of its resources to the nation's graduate schools so that they might better address this problem in a serious, systematic way". I invite you and your faculty to be in touch with us about your good ideas.

In addition, the Endowment supports many projects that strengthen the preparation of faculty already in service. At the college and university level, these projects typically benefit more than one institution and include institutes, consortial projects to increase access and strengthen rigor in courses and curricula on several campuses through resource sharing, workshops, and conferences.

In its program "Institutes for College and University Faculty" the Endowment supports outstanding scholar-teachers who wish to plan a program of study for

their faculty colleagues. The institutes are normally held in the summer months for four to six weeks and include twenty to thirty participants who focus upon both scholarship and pedagogy.

Among the consortial projects currently being supported by the Endowment is "The Boston Area Colloquium in Ancient Philosophy" at Boston University, an integrated series of public lectures, model classes, and special seminars for faculty. A second consortial project is that of the Graduate Theological Union based at the University of California, Berkeley, the University of Chicago and Harvard University. This project, entitled "A Global Approach to the Study of Religion", is producing a resource guide and two institutes for twenty five college and university teachers in the comparative study of religion.

Through the Modern Language Association the Endowment supported a conference at the University of Virginia last fall. Senior faculty in modern languages came together to discuss the preparation of advanced graduate students for undergraduate teaching. The conference developed recommendations to the MLA Commission on Foreign Languages for transmission to the membership of the Association.

An exception to the multi-institutional guideline and a useful model is a project at the University of Chicago, "A Program for the Creation of Graduate Research Workshops in the Humanities." This project is designed to strengthen graduate education by supporting closer research collaboration between faculty and graduate students and by focussing upon issues broader than those typically explored in a single discipline. The emphasis for graduate students is upon broad issues in their disciplines, during the years in which their individual research for the dissertation might otherwise lead them away from broader issues in their fields.

Beyond these kinds of activities, the Endowment invites your leadership in addressing other institutional needs through three other options in the Division of Education Programs.

Through the Nontraditional Learners Program the Endowment seeks to strengthen courses and curricula designed for adult students who, because of other commitments, cannot take advantage of traditional full-time, daytime academic course work. This program supports development of materials and strategies to reach the distant learner; the delivery of courses and programs off-campus; and materials and curriculum development for programs of study designed for the parttime adult student. In the summer of 1987 the University of Minnesota will sponsor a one-week institute, "Humanities Scholarship and Instruction for Nontraditional Students." Twenty five teams of three faculty and administrators will work for a week with leading scholar-teachers to update their thinking about new scholarship in the humanities and about course and curriculum planning for adult learners.

In "Central Disciplines", faculty may gain support in three categories: 1) Improving Introductory Courses, 2) Promoting Excellence in a Field, and 3) Fostering Coherence throughout an Institution. In the latter program, grants have

typically supported creation or revision of a core curriculum to strengthen and increase humanities courses in a general studies program or to provide for the development of interdisciplinary courses. Two examples may be helpful.

The University Honors Program at The Catholic University of America has developed a series of integrated core courses in the liberal arts to replace the distribution requirements in this program. Two core humanities sequences of four courses each are being created: one sequence will be based on the Aristotelian *studium* and the other sequence will explore the history of Christian civilization. Both sequences involve senior and graduate faculty. They explore a significant body of classical and Christian texts, providing the students with the critical skills for work in a variety of fields. The sequences are being developed by all participating faculty members during a four-week summer session. There will be a follow-up, one week workshop for the same participants in the following summer.

At the University of Minnesota, Morris, the Endowment is supporting a three-year project to strengthen the teaching and research of the French, German, and Spanish faculty and to expand their expertise beyond their primary research interests. The faculty will invite acknowledged leaders in language teaching to speak on pedagogical innovations. The grant also funds faculty participation in post-doctoral training in new fields and brings to the campus noted literary scholars who represent fields or methodological viewpoints different from those of UMM faculty. In the Elementary and Secondary program, the division supports principally two kinds of activities: summer institutes for elementary or secondary teachers and administrators to study central texts and ways of strengthening the teaching of them, and follow-up activities to enable participants to work together on the application of what has been learned to their work in the classroom. These are collaborative projects that bring schools into lasting relations with nearby colleges and universities. For example, through a variety of activities, professors of American literature and secondary school English teachers in Virginia will work together for three years to improve the teaching of American literature. The activities will include in-service workshops led by the literature professors, colloquia involving both teachers and professors, special graduate courses, and a scholar-in-residence program designed especially for the teachers. In another project, in collaboration with the University of the District of Columbia, the District of Columbia Public Schools are offering an opportunity for teachers of English to study major works of literature in depth. Works to be studied include the *Odyssey*, *Don Quixote*, and *The Adventures of Huckleberry Finn*. UDC faculty and scholars from other universities in Washington will work with the teachers to explore ways of improving the literature curriculum in the D.C. Public Schools. The teachers will write extensively throughout the project as a way of improving their strategies for the teaching of writing.

Before leaving the matter of "issues and opportunities" in the Division of Education Programs, I should like to mention one other possibility for exciting

proposals—one that represents a relatively new kind of emphasis in the Division. This possibility is for proposals that would help to make of academic libraries more vital centers for teaching and learning in the humanities. The Endowment will welcome good ideas toward this end as well, in the months ahead.

In all of these projects the kinds of expenses that the Endowment covers are: release time for faculty study within or across disciplines; costs for seminars, workshops, sabbaticals, and summer stipends; library acquisitions; costs for consultants or visiting scholars; travel; and materials and services to support a project. In addition, planning grants are sometimes awarded for the development of strategies that will be supported by the institution.

In the Division of Fellowships and Seminars 5283 applications were received last year, about two thirds of all that came into NEH. Six programs in this division will be of greatest interest to you and your faculties: 1) Student Fellowships; 2) Travel to Collections—awards of $750 are made for faculty travel to archives and libraries to advance their research; 3) Summer Stipends—the Endowment provides support for two months for college and university faculty to work during the summer on projects to advance research and thereby improve teaching; 4) Summer Seminars for College Faculty—faculty from non-Ph.D.-granting institutions work for up to eight weeks with leading scholars in disciplines of the humanities. 5) Summer Seminars for High School Teachers—the project directors say this is the most rewarding teaching of their careers. These seminars provide on-going professional development for high school teachers and administrators. As in the seminars for college faculty, the emphasis is upon renewed study of central texts and topics; and 6) Fellowships for University Teachers—up to one year of support is provided to faculty from institutions granting the Ph.D. degree.

In the Division of Research Programs, the priority is to support projects that might not succeed without federal help. The Research Division receives about 1,200 applications per year and makes about 300 grants, most to produce book-length studies. Last year, 230 books appeared that were a result of grants made in earlier years.

It may be helpful to contrast the Research Division with the Division of Fellowships and Seminars. We noted that, except for supporting seminars for college and secondary teachers, the Fellowships and Seminars Division makes its grants to individuals, usually for a period not exceeding one year. A book or other "product" may result. Although some grants are awarded by the Research Division to individuals for interpretive research, most grants made in this division are for collaborative research for projects of longer than one year. In addition, projects must yield a product.

The Research Division describes itself in four programs: Texts; Reference Materials; Interpretive Research; and Regrants.

The *Texts* program supports the preparation of humanities texts in three categories: Editions; Translations; and Publication Subvention. The publication of

texts is really the heart of the Research Division's work. These are long-term projects, often involving many scholars.

The Reference Materials program may be the hardest of the Research Division programs to explain. Here the Endowment supports two modes of putting into the hands of scholars the materials of scholarship: "Tools" and "Access". The "Tools" category frequently provides support that used to go primarily for encyclopedias to automated data bases and other projects that may open up a field of scholarship. The category supports the development of major bibliographical resources for humanities scholarship. In the "Access" category support is provided for the production of descriptive *finding aids* and projects for archival arrangement and cataloging in all media.

The Interpretive Research program supports the production of new and original research that spans the enterprise of knowledge. Projects are essentially collaborative, though individuals whose projects require more than a year of research and writing are eligible. Individual proposals for full or part-time activities of up to three years receive support. In addition, several awards are made each year for the creation of research centers or similarly structured programs that may focus on one topic or on several interrelated ones. Grants are made for up to three years and are renewable. Moreover, the Endowment's progam in "Humanities, Science, and Technology" also lives in the Interpretive Research category. In this program humanities and social sciences scholars bring the theories and methods of their disciplines to a study of the implications of work in science and technology. Historical and philosophical approaches to the study of science and technology are given priority.

Finally, through the Research Division, the Endowment makes awards for regrants to several national associations and learned societies to support research abroad and participation in international conferences. Faculty make application for these awards directly to such groups as the Social Science Research Council, the International Research and Exchange Board and the American Council of Learned Societies.

In closing, let me say that I hope you find in the Endowment a responsive colleague and an advocate for the work you and your faculties are doing in the humanities. I would be happy to have questions about any of the grant-making programs I have described or about any other topics that might encourage you to be in touch with the Endowment about your work.

Plenary Session I

Wednesday, December 3, 1986

THE GRADUATE DEAN IN UNIVERSITY ADMINISTRATION: CHANGING ROLES AND RESPONSIBILITIES

Presiding: Jules B. LaPidus, *President, CGS*
Speakers: Sister Anne Clark, *Dean of Graduate Studies, College of Saint Rose*
John H. D'Arms, *Dean of the Graduate School, University of Michigan*
Edward N. Wilson, *Dean of Graduate School of Arts and Sciences, Washington University*
Gene L. Woodruff, *Vice Provost for Research and Dean of Graduate School, University of Washington*

Sister Anne Clark

When in the mid '70s, The College of Saint Rose (CSR) began to diddle with the roles and responsibilities of our various administrative titles and the job descriptions thereof, I can remember more than one influential faculty member agreeing with some administrators that change was an absolute necessity and long overdue. There were too many offices, too much money wasted, too much duplication of effort, a lack of cooperation and coordination. Of course, it was the students who were not being "properly served" because of this "lack of common sense on the part of the administration." As it turned out, the students about whom we were most concerned were our graduate students and those in our Experienced Adult Program and in Continuing Studies—our "returning adults." Five years later we were looking at changes we had made and proposing additional ones.

In fact, I have found evidence of change not only at CSR but also in my experience as Secretary-Treasurer of the Northeastern Association of Graduate Schools. A fall mailing to the 122 member institutions of NAGS in which changes in either representative or titles of the incumbents were asked for showed that over 25 percent of the membership had had a change in representation and/or title. Many universities have already reorganized or are in the process of doing so.

Saint Rose is an independent, coeducational liberal arts college located in Albany, the capital of New York state. The current enrollment is thirteen hundred plus undergraduate full-time students, and another eight hundred plus part-time students participate in 31 bachelor degree programs. There are nearly nine hundred students enrolled in twenty master's degree programs. The College is in its 67th year, the graduate school in its 37th year.

Early in 1978, in response to the call referred to earlier of some faculty and administrators, a proposal was developed by the administrators of the graduate school, the experienced adult program, and the continuing education office. The plan was to reorganize the administration of these three offices into a single coordinated unit headed by a Dean of Graduate and Continuing Studies. The objectives of this reorganization as stated were: 1) to continue and strengthen these three distinctive programs which had so well furthered the academic goals of the college; 2) to deal creatively with the emerging patterns of student enrollment anticipated in the 1980s; 3) to increase both our efforts to reach new student populations as well as our services to enrolled students; 4) to promote, support, and maximize the effectiveness of those offices currently involved with the admission and direction of returning adult students.

The graduate, continuing studies, and experienced adult programs which had begun modestly had now grown to be very important parts of the academic services which the college offered to its various constituencies.

We were, of course, concerned for the future of the College of Saint Rose because we were aware that between 1970 and 1978, 120 private institutions of higher education had closed, 16 had come under public control, and another 37 had been forced to merge with other institutions. We also knew that within six years, New York state high schools would be graduating fifty thousand fewer students than in June 1977. At the time, it seemed to us that we had to make changes if we wanted to remain academically and fiscally healthy.

Furthermore, there had been a nationwide increase in the part-time student population from 1.6 million to 4.5 million between 1965 and 1975. In 1972, for the first time, the part-time student population surpassed the full-time population. Higher education continues to draw students, but fewer of them are 18 to 22 years old, and more of them are over 25; more are female, and more of them need to come to college as part-time students.

The main conclusion which the administrators drew from these facts was that the structure of the programs then in effect imposed limits on the ability of the administrators to attract, admit, and service the growing number of part-time students who were applying to our adult programs. Those involved then decided that there would be a Dean of Graduate and Continuing Studies who would work closely with the Directors of the Experienced Adult Program and Continuing Studies, and the Associate Dean of Graduate Programs. The rationale was that this reorganized unit whose concerns were more alike than different would be able to respond more quickly and effectively to external conditions and so better promote the well-being of CSR. They hoped that the team rather than separate individuals would be more resourceful at producing creative solutions to all the needs of the increasing numbers of part-time students.

From the beginning the reorganization was not intended to blur the academic distinction between graduate and undergraduate study; nor was it meant to weaken the hard-won credibility of the graduate school, but rather to strengthen it. The thrust of the reorganization was believed to be a safeguarding of all the

positive results of the past, and an opening of creative doors into the future as a result of shared responsibilities.

During the summer of 1979, this reorganization or change, if you will, was implemented. The offices of the four administrators were relocated in order to make them contiguous to one another, to utilize more effectively the secretarial and other support services. The three budgets were centralized in the office of the Dean in the hopes that expenses could be decreased by sharing. The "team" of four began to discuss ways to maximize both the effectiveness and efficiency in advertising, recruitment, representation at meetings, telephone coverage, secretarial services, student advisement, data collection, and long range planning; it was hoped that there would be more creative use of facilities, as well as the exploration of income-producing workshops, course, and program development.

The Dean of Graduate and Continuing Studies was to provide general academic leadership, management, and coordination of all activities associated with the graduate, experienced adult, and continuing studies programs. Coordination was, indeed, the key in the job description since each of the administrators of the three programs reported directly to the Dean.

After five years of using this format, the Dean of Graduate and Continuing Studies announced his departure. Of course, this provided an opportune time for, what else, an evaluation of the organization! (Who evaluates more often than we in higher education do?!) The result was the elimination of one of the four administrators, and, again, what else? a change in titles! The Associate Dean for Graduate Programs (I) became Dean for Graduate Studies, and each of the Directors became Associate Deans of their respective programs; all three reported to the Vice President for Academic Affairs.

These changes have had no effect on the attainment of the goals for which the reorganization was originally planned. The three administrators continue to cooperate and coordinate the activities mentioned earlier. The one major difference in our responsibilities is in budgeting; we now have separate budgets, although we still confer and share as we did previously. As it turned out, the merging of the budgets did not result in a saving!

Of greater interest to us is what, if any, were the changes made in the role and responsibilities of the graduate dean? Essentially none. I am responsible now as before for everything pertaining to the graduate school, that is, monitoring, developing, improving, and reviewing our graduate programs. In other words, I am responsible, as always, for the quality of education all of our graduate students receive. I also continue to work closely with graduate faculty members on all of these matters, attempting to be as Dean Blount suggested in his "Anatomy of a Graduate Dean", the "glue that keeps academic seams together."

In addition, I am responsible for working with the Graduate Academic Committee in developing and implementing admissions policies and procedures, including initial interviews, preparation of credentials for review by admissions committees, the follow-up of applicants, and working with the financial aid of-

fice on scholarships, assistantships, etc. I monitor the administration of final evaluations, keep necessary statistics on standardized tests, admissions, and retention. Other responsibilities include providing for advisement of all graduate students, and acting as liaison with the State Education Department regarding graduate school matters. In cooperation with the two associate deans of the EAP and C.S. and the Office of Public Information, I promote graduate programs. As graduate dean, I have assumed many of the committee responsibilities which had been the work of the Dean of Graduate and Continuing Studies, for example, long range planning, budget, president's staff, and so on—in addition to the miscellaneous activities which are, I know, the experience of every graduate dean present.

After all this has been said, however, I believe that the responsibility of every graduate dean, regardless of the organizational structure in which (s)he works is as Ronald Roskens said last April in his talk to the Midwestern Association of Graduate Schools, "They (graduate deans) must be vigorous, articulate champions of excellence—pervasive exemplars, if you will, of an institution's dedication to the highest possible levels of academic expectation." That, fellow deans, is my responsibility and yours! Somehow, we do it, no matter what title is given to us or what superstructure is imposed.

John H. D'Arms

Introduction

Early in 1983, University of Michigan President Harold T. Shapiro charged a faculty committee to examine the offices and functions of the Dean of the Graduate School, and of the Vice President for Research, and to advise him as to the feasibility of a merger of the two offices. My predecessor Alfred S. Sussman, well known to many of you here, was asked to serve as Acting Vice President for Research and Graduate Studies, while the "study of the merger" proceeded.

In the end, more than a year later, the committee recommended the maintenance of two distinct offices. They emphasized the importance of building stronger formal and informal ties between the Research Vice President's Office and that of the Graduate Dean. They advocated expanding the Graduate Dean's role in central university decision-making. The committee then disbanded and disappeared into the gloomy mist of late winter, leaving to others the matters of reaching a final decision, and of working out the administrative and other implications of the final decision reached.

President Shapiro accepted the recommendations of the committee. In so doing, he was influenced in part by the University of Michigan's institutional history and traditions. Thanks to an unusually generous benefactor, the Dean of the Horace H. Rackham School of Graduate Studies has his offices in what is

arguably the most magnificent amalgam of neo-classical design and art-deco ornament of any academic building in the middle west. He manages a private endowment, in excess of $26 million, designated for graduate student financial support, faculty research, and scholarly grants and fellowships. He presides over an elected faculty board which sets policy for the administration of these funds, monitors and approves new graduate programs, and conducts periodic reviews of graduate departments, including the more than thirty interdisciplinary graduate programs which are largely dependent upon the Graduate School. In carrying out these responsibilities, the Graduate School has historically been committed to a credible, comprehensive, and well-publicized system of faculty peer review. In summary, the Graduate Dean's faculty role, together with his commitment to the academic quality of the 6,000 graduate students, especially doctoral students and their programs, has always been regarded as fundamental; the Dean has been perceived, across schools and colleges, as a major patron of faculty engaged in non-sponsored scholarship, creative activities, and research.

The Research Vice President, on the other hand, has an equally full but substantially different portfolio: formulating, articulating and implementing research and technology transfer policies; guiding the University's on-going relations with the federal agencies; protecting and enhancing the research environment; managing indirect cost recovery, and the intellectual properties office. The Vice President oversees federal and other sponsored research grants and contracts in excess, annually, of $180 million; and has administrative responsibility for the cross-disciplinary research units, and the primary research staff, which are an outgrowth of such sponsored research.

In short, given the scale and complexity of the University of Michigan, together with the historically diverse functions which the Graduate Dean and the Research Vice President have performed, maintaining two offices seemed to the President to be the wiser course. I suspect that an additional influential factor was the President's and Provost's recognition of the need for increased academic leadership within the central administration.

The Dean's Expanded Portfolio

In the summer of 1985, Linda S. Wilson was appointed Vice President for Research, and I became Dean of the Graduate School. Three substantive additions to the Dean's portfolio followed at once:

a. A new working team, the Academic Policy Group, consisting of the President, the Provost, the Vice President for Research, and the Graduate Dean, was created. We meet bi-weekly for two hours; we are revising the reporting relationships of cross-college and cross-disciplinary centers and institutes; we are revising allocation policy and procedures of University discretionary funds; we are discussing broader implications of academic policy and new initiatives in academic affairs.

b. The Graduate Dean has been added to the President's cabinet. Michigan's Executive Officers meet weekly for three hours and include the President, Provost, Vice Presidents for Business and Finance, Government Relations, Development, Student Services, Research, as well as the branch campus Chancellors, the Vice Provost for Medical Affairs, the Director of the Alumni Association, and the President of the Faculty Senate.
c. The Graduate Dean now reviews, along with the President and Provost, promotion and tenure recommendations from all 17 of Michigan's Schools and Colleges.

The Impact of Change

After sixteen months of experience, it is already clear that the Graduate Dean is in fact helping to set the academic agenda for the University; it is equally clear that he is in a position to project issues concerning graduate education to the highest levels of the University. Seven concrete examples of new developments will help give a more immediate sense of the impact of change.

1. Early in my first year as Dean, then-Provost Billy E. Frye and I appointed a faculty task force to investigate and make recommendations on financial aid policy, as it currently affects all graduate and professional students. The committee has just reported, and has recommended the strengthening and expansion of the role of the Graduate Dean in determining, allocating, and monitoring the distribution of graduate aid funds throughout the University, to both graduate and professional programs.
2. An additional academic voice has been added to the Executive Officers, not all of whom emerge from the faculty or have a good feel for lives lived in classrooms, offices, libraries and laboratories. While that academic voice needs to be institutionally non-partisan in its tone, it is probably not trivial to add that mine is the one academic perspective which has emerged from twenty years of teaching and scholarship in the humanities. Both symbolically and substantively, that perspective can be valuable at a large research university.
3. Responsibility for administering, and for policy questions concerning, academic awards has been transferred from the Office of the Provost to that of the Graduate School. The Dean thus becomes a more visible presence in honoring faculty, and is formally encouraged to be imaginative about more effective ways of recognizing distinction. I have instituted at the Graduate School a new series of book-launchings, cross-disciplinary symposia which celebrate the publication of a particularly interesting book by a faculty member—before the work has been noticed in professional journals and reviewers have told us what to think. This is proving to be an attractive way of combining the celebration of academic achievement with a substantive intellectual event.

4. A close and collaborative relationship between the Graduate Dean and Vice President for Research is of central importance, given the overlap of our respective agendas. Linda Wilson's federal preoccupations include research and training grants for graduate students, and I control funds, as I've already noted, designed to enhance the scholarly, artistic and research activities of faculty. Linda Wilson and I have recently joined together to combine faculty research with graduate student support through appointments of Research Assistants. This "Research Partnership Program" provides a twelve-month award (and hence summer support) to outstanding students who will be working in close collaboration with a faculty sponsor on a specific scholarly project. Our respective offices plan other joint initiatives, some of them intellectual; we are also attempting to rationalize, revise and redefine the categories of activities which we do—and do not—support.
5. A $10 million grant has recently been awarded to the University by the Kellogg Foundation, part of which is intended to stimulate imaginative new forms of cooperation in cross-disciplinary activities. The Graduate Dean has been enlisted to help develop guidelines for the administration of the grant; the Dean, the Provost, and the Vice President for Research will make final recommendations to the President as to which projects should be funded. The Academic Policy Group has been the locus for these discussions, and the academic reach of this group lends it credibility: our President is an economist, James Duderstadt, our new Provost, is a nuclear engineer, Linda Wilson is a chemist, and my own background is in classics and ancient history.
6. The Provost perceives the Graduate Dean as, de facto, an Associate Vice President for Academic Affairs. I participate in weekly meetings of senior staff in Academic Affairs, and the Provost has added significantly to the discretionary academic budget of the Graduate School. As a result, I am now in a stronger position to encourage faculty to propose innovative and integrative initiatives of high quality, and am able to provide funding for them. I am particularly receptive, here, to proposals which will improve the quality and intensity of intellectual exchange between faculty and graduate students; and the weekly meetings in Academic Affairs provide a forum for discussion of how these projects are working.
7. In the area of development, it is increasingly recognized that persons who best understand the overall academic strengths and objectives of the University make the strongest and most effective cases before the major professional foundations which support higher education. All members of the Academic Policy Group, including the Graduate Dean, are playing an active role in developing major University proposals, and in familiarizing themselves with the programmatic initiatives which foundations themselves are seeking to further.

The Dean's New Role: Ambiguities

There are undeniable ambiguities in this Graduate Dean's evolving role; I propose to be candid with you, and to face them squarely.

1. Officially, the Dean continues to report to the Provost. On the other hand, he is simultaneously expected to exercise independent judgment on all matters which come before the Executive Officers; there have been—and will continue to be—issues about which the Dean and the Provost disagree.
2. The Dean sits with the Executive Officers, and has been encouraged to believe that his opinions are treated with the same respect—and on occasion, I assure you, with the same disrespect—as those voiced by other members of that body. On the other hand, the Dean is not, technically, an Executive Officer, and this has implications—among them that he has less regular contact with, and formally less access to, the President than have other officers.
3. The Dean reports to the Provost, to whom he presents all requests for general fund support for the Graduate School. On the other hand, the Dean also reports to the Graduate School's Board of Governors, which controls the School's substantial endowment funds; that Board is chaired by the President. In short, the resources flowing to the Dean are controlled both by the Provost and by the President; budget proposals must be presented and defended before each.
4. Finally, relationships with my fellow deans are somewhat ambiguous. I sit twice each month with the other 16 school and college deans on the Academic Affairs Advisory Council, which the Provost chairs. I am the only Dean who (on the one hand) does not appoint faculty, and who (on the other) meets regularly both with the Executive Officers, and with the Provost's senior staff. I allocate only a portion of graduate financial aid—and such funds as I do allocate flow to departments and programs, rather than to line deans. It would be surprising if there were not potential for tension here.

Such ambiguities have their problematic aspects; they also assure a rich, lively, and full daily existence, not wholly reducible to neat lines on an organizational chart. But taken as a whole, I view the ambiguities as an opportunity, not as a check on autonomy. The great advantage of reporting to a host of constituencies is that I have the chance to influence every one of them.

Conclusion: Some Challenges

Jules LaPidus has invited us to speculate, on the basis of our personal experience, about the future of the graduate deanship. I am uncomfortable with the

role of seer, and so will try instead to articulate two special challenges—for me, at my institution, but also, I suspect, for a good number of other graduate deans assembled here.

First, the graduate dean in many universities is coming more and more to be regarded as one of the few academic officers—and academic thinkers—whose range of interests bridges the many individual units, departments, disciplines, schools and colleges. This is an opportunity: since many fields of study are metabolizing at their edges, rather than in their traditional centers, and all across academic culture there are signs of the flight of talent to the peripheries; and since, at the same time, the dominance of the disciplines is perhaps more entrenched than it has ever been, we need the graduate dean, in her or his function as impartial intellectual broker between faculty and their departments, perhaps more than ever before. But—and herein lies the challenge—a predilection for broader perspectives on knowledge is not in itself enough; we need to be asking the right integrative, and connecting, questions. We need a sense of balance above all, a sense of how to work with our most talented faculty and students to achieve better integration of the work occurring at the edges of fields with the best work which the disciplines are producing. Attempting to exert this kind of intellectual leadership, with limited resources, and in a university as large, as complex and as heavily decentralized as the University of Michigan, represents one of the greatest challenges I face.

Second, there is a challenge of a different, more structural order. Historically, the Graduate Dean has functioned as a kind of buffer between individual faculty members and their line deans. The Graduate Dean has been counted upon to be sympathetic to appeals—about programs, about funding, about new forms of intellectual relationships—which a line dean might need, or wish, to refuse. But under the new arrangements at Michigan, in which the dean is being drawn more and more into the central administration, consuming many hours each week in meetings with fellow administrators, and serving increasingly as a spokesman for institutional objectives, opportunities for contact with faculty diminish, and the dean's traditional function as faculty spokesman may weaken. The challenge is to find enough hours for frequent, vigorous, and provocative exchanges with colleagues; to ensure, in short, that the Graduate Dean interacts regularly with graduate faculty, as well as with administrators.

One might summarize recent organizational arrangements concerning the Graduate Deanship at Michigan by reversing a familiar adage: "plus c'est la même chose, plus ça change." And though I'm more than cautiously optimistic about the forms of change, I'd hesitate to extrapolate from them, and to recommend similar arrangements for other institutions, even those of roughly comparable size and character. Universities have their own distinctive traditions; administrative officers at any given time have their own particular capacities and talents. The right mix of people, in the last analysis, is probably more important than the formal reporting relationships set forth in organizational charts.

Edward N. Wilson

My current dual role at Washington University as Dean of the Graduate School of Arts and Sciences and separately as Dean of University College, the evening adult learning branch of Arts and Sciences, sounds bizarre. As I'll try to explain in the next few minutes, for the current structure and goals of my University, the combination lends itself to some intriguing interactions.

The Faculty of Arts and Sciences at Washington University is academically subdivided into three units: the College of Arts and Sciences in which some 2,500 full-time undergraduates enroll; the Graduate School of Arts and Sciences housing some 1,000 full-time graduate students; and University College with 1,000 part-time students, some undergraduate, some graduate and some not seeking degrees. That adds up to 4,500 of Washington University's total enrollment of 10,700—the remaining students are enrolled in one of the eight professional schools of the University: Architecture, Business, Dental Medicine, Engineering, Fine Arts, Law, Medicine, and Social Work.

The Graduate School is now heavily Ph.D. oriented—over 80% of those entering the Graduate School hope to earn a Ph.D. with us. Through the dismal decade from the mid-70s to the mid-80s, the Graduate School was pleased to see its Ph.D. programs hold up well—some drops in the humanities and social sciences, some gains in the natural sciences, but overall fairly steady. In the same decade, however, we saw large enrollment declines in our humanities and social sciences master's programs. Part of the decline was due to national trends (e.g. ongoing national woes in the field of Education), part due to increased competition from local colleges and universities as well as growth in professional programs offered by our colleagues in other Schools of the University, and part due to disinclination on our part to find ways to accommodate the needs of terminal master's students increasingly interested in part-time job-related programs.

University College is a relative newcomer to Arts and Sciences. Up until 1980, University College was the primary compound of the School for Continuing Education, an umbrella unit offering evening instruction, predominantly undergraduate, in all disciplines. In 1980, the School for Continuing Education was disbanded and Arts and Sciences took over most of its programs while the rest were either phased out or picked up by one of the professional schools. My predecessor as Dean of University College, a distinguished historian named Robert C. Williams, introduced over his five-year stewardship three part-time master's programs: first the Master of Liberal Arts in 1980, then the M.A. in International Affairs in 1984, and in January of this year an M.A. in Human Resources Management reconstituted from an earlier day-time program. As Dean of the Graduate School I was closely aware of these programs, since it was decided early on that the degrees would be conferred by the Graduate School. Common features of the three programs are as follows:

(1) The majority of the instruction is by full-time tenure-track members of

the Faculty of Arts and Sciences serving on an overload basis for extra compensation. For the M.L.A. this rule is absolute—no adjunct instructor has ever been permitted to give an M.L.A. course. The International Affairs Program (I.A.P. for short) and Human Resources Management (H.R.M.) deliberately employ a few well qualified adjuncts from the business world to enrich and add practicality to the offerings with which Arts and Sciences faculty members are comfortable. Both programs are exceedingly well served by Advisory Boards made up largely of professionals in high-level corporate positions.

(2) Students enter initially through University College on a provisional basis. After successfully completing two core courses in their respective programs, they apply for full admission not only to University College but to the Graduate School as well. Thereafter, registration and day-to-day administration remains in the hands of University College, but the Graduate School confers the degrees.

(3) Tuition rates for the three programs are less than half of the day rate. Most M.L.A. students pay their own tuition, while most I.A.P. and H.R.M. students have their tuition paid by employers.

H.R.M. has gotten off to a good start with 40 students in its first year of operation. M.L.A. and I.A.P. have been very successful. Each has 50–70 active students and is continuing to grow. Even better, the faculty have been delighted with the programs. It's delightful to hear veteran full professors laced with battle scars from day-time undergraduate teaching and Ph.D. mentorship exude over the joys of shared learning with sophisticated savvy adults who like to talk, base their comments on a wealth of practical experience, and refuse to tolerate stale lectures or dry bones details. Many describe the experience as a much needed tonic and a welcome confirmation of the high value society places on the world of ideas. Another decided plus is the success with team-taught broad-look interdisciplinary courses of the type to which the curriculum of traditional master's programs and virtually all Ph.D. programs have long been resistant.

To our great regret, Bob Williams left us this past July to become Dean of the Faculty and Vice President for Academic Affairs at Davidson College. I agreed to add University College to my graduate portfolio for the following reasons:

(1) I wanted to prod the same day-time faculty and departmental chairs with whom I conduct the daily business of the Graduate School into thinking about either creating new part-time master's programs with the same structure or reviving moribund day-time master's programs by recasting them as evening master's programs. To my surprise and delight, four new ideas are now in the talking stage, with at least two of them apt to lead to the opening of new degree programs for 1987–88.

(2) I wanted to continue Bob's laudable efforts to involve more day faculty in night-time teaching and thereby not only serve better our local community but bring back to the day school new ideas for innovative curricular changes.

(3) On the whole, we discourage day and night students from crossing over to sit in the same classroom. Yet a little bit of cross-fertilization is healthy. By wearing the hats of administration for both groups, it's not difficult to satisfactorily work out the exceptional cases where a cross-over makes sense. For example, some of our day-time Ph.D. students in Economics or Political Science ought to experience the kind of theory mixed with practice presentations in International Affairs which are not available in standard Ph.D. fare. It's healthy for them as well as their mentors to appreciate the considerable intelligence and wisdom of individuals highly placed in foreign trade sectors of St. Louis's many multi-national companies: Monsanto, McDonnell Douglas, General Dynamics, Ralston Purina, etc. In the other direction, three or four of the M.L.A. students, having been granted the opportunity to take a Ph.D. course or two as part of their evening degree programs, have later taken the big plunge of entering Ph.D. programs.

(4) I've stressed thus far the increasing graduate orientation of University College. Although we don't anticipate growth in University College's undergraduate programs, we certainly don't want to phase out the courses which have worked well in the past. In several of them, the bulk of instruction is carried on by advanced graduate students. For many of these students, University College is the chief vehicle by which they can achieve the solid training in teaching every Ph.D. program wants to offer. My dual capacity offers possibilities here for improved efforts to insure the regular availability of teaching opportunities for graduate students, monitor the quality of teaching and supervision, and iron out knotty financial details.

(5) For peculiar historical reasons, University College continues to operate our English as a Second Language Program for foreign students. Since around 18% of the Graduate School's enrollment is foreign-born and many of them are less than proficient in English, ultimate control of the ESL program by me makes easier the kind of pushing and pulling in which every graduate dean engages during the endless conflicts between English proficiency training and disciplinary training needs for foreign students in the sciences.

The above gives only a brief glimpse of the interactions opened up by my dual role and avoids completely the headaches of more paperwork and divided office strains.

Gene L. Woodruff

I think it may be helpful to describe briefly the structure at the University of Washington. After doing that I will attempt to relate this structure to graduate schools generally, at least insofar as I am familiar with them.

There are at least three different models for the position of Dean of the Graduate School. In what is probably a majority of institutions the Dean has only the one title. Another rather common situation is for the Dean also to have responsibility for the research enterprise on campus. Another distinction, which may or may not co-exist with either of the first two alternatives, is what I describe as having the Dean as "a member of the Central Administration". I'll say more about this later.

Three characteristics of the university are important to the present discussion: type of support, size, amount of emphasis on research. The distinction between public vs. private support, while important for many purposes, is probably not so relevant to the structure of the graduate school. Size is obviously highly relevant. Any attempt to define a meaningful boundary between "large" and "small" will obviously be arbitrary, but for purposes of discussion, I have assumed that anything over 15,000 students is large. Another important factor is the emphasis on research. Again, for purposes of discussion only, I will assume that anything in excess of $100 million per year of external research support is large. (Note—In subsequent discussions I have become convinced that this limit is too high. In FY 1985 only 15 universities in the U.S. had federal R&D obligations in excess of this amount, and only 23 had greater total R&D expenditures. A more reasonable definition is probably $60 million per year in total R&D expenditures. This encompasses approximately 50 U.S. universities.)

The University of Washington is a public institution that is large in terms of both size and research. We have about 34,000 students, of which about 7,000 are graduate and another 1,500 are professional students (including medicine, law, and dentistry). The faculty totals about 2,500 who are teaching faculty plus an additional 500 research faculty. This latter category is a feature of a research university, and one which involves some important and, to a considerable extent, unresolved issues. During the last fiscal year grant and contract awards totaled $237 million.

In the University of Washington's organization, the Dean of the Graduate School is also the Vice Provost for Research. For the year 1979 there was a separate Vice President for Research. Another feature in the University of Washington's organization is the position of Provost. The Provost is the senior administrator next to the President.

In the organization of the Graduate School is included the administrative structure for research.

During the past year I have served on 24 committees, seven of which I chaired. Four of the committees are temporary, but that's somewhat misleading since next year there will be other temporary committees coming along, with the number unlikely to change from year to year. In characterizing the committees by activity, there are eight with graduate school activity, three with research activity, and thirteen whose activities I identify as being part of the Central Administration. It is worth noting that the ones concerned with Central Admin-

istration activities, like the President's Cabinet, and the University Budget Committee meet for 2–3 hours every week.

What does all this mean? In particular, what are the advantages and disadvantages of the arrangement I've described for the University of Washington as compared with alternatives? I won't pretend that I can give definitive answers to these questions, but I will venture some opinions.

It is clear that, to some extent at least, there is a trade-off between depth and scope. Some of my colleagues review every single TA and RA appointment. In many cases this review includes reading reports prepared by each of these students every quarter. I believe that is a very worthwhile practice for a number of reasons. This sort of attention on the part of a senior administrator helps to assure quality, helps to identify problems before they become serious, and, by no means least in importance, it brings an element of humanity, a personal touch into what can easily become a large and cold academic bureaucracy. If there is any doubt in your mind, let me assure you that I can't possibly do that with over 2000 TAs and RAs, and with all these other duties.

I understand that at some institutions the graduate dean participates in the reviews of faculty for promotion and tenure. I personally feel that this is less valuable than close attention to graduate student appointments and related matters, because so much of the faculty review is discipline-dependent. Nevertheless, this is another example of the ability of those graduate deans who have only graduate school responsibilities to perform an important unifying academic role.

All of this suggests a rule of thumb. If a university is larger than some specified size, say 15,000 students and about $60M/yr. in research activity, the graduate dean should not have additional titles. Otherwise he or she simply does not have the time to devote the necessary amount of attention to some of the important fundamentals of the job.

Let me now, however, offer some contrasting views. I firmly believe that graduate education and research are strongly intertwined. When we do graduate program reviews, I find that, with very few exceptions, knowing about research activity is extremely important. It's not enough to simply read the review committee report with the lists of publications and the grants and contracts. You need to know which programs have large amounts of research support for RA appointments, which ones could have such support even if they don't, and which ones have little or no opportunity for such support. You need to know who are the stars with the big reputations, and what are the networks of individuals who work together, both within a given program, and across disciplinary lines.

Similarly, there are important decisions to be made in the operation of the research enterprise which can be made wisely only with detailed information about academic programs. These decisions are mostly, but not exclusively, budgetary in nature. Examples include the allocation of equipment matching funds, waivers of indirect costs, encouraging or discouraging the formation of interdis-

ciplinary research groups (which is not necessarily a budget issue), and how to organize such activities as reviews of human subjects applications.

It may well be that other types of cross-linkages are important in other universities, like continuing education, for example, so that a meaningful joint title might be Graduate School Dean/Dean of Continuing Education.

I can also tell you that in a university the size of the University of Washington it's very difficult to keep track of what's happening in those areas in which you are not involved.

These last few comments suggest just the opposite conclusion from that indicated earlier. Namely, that in the larger university the Dean *should* have an additional title. The additional title should be that for the activity which is strongly cross-linked with graduate education on the campus. Most often this activity will be research.

My own experience is limited. I have worked only in a large research university, and I have been a graduate dean for only 2½ years. With those disclaimers in mind I will offer my opinion.

1. In a "small" university it can work either way. By that I mean that the graduate school dean can have just one title, or the job can be combined with responsibility for research. If, however, the jobs are separate, it is obviously very important to have good communications between the graduate dean and the person responsible for the research enterprise.

2. In a large university I believe having the graduate school and research duties combined in the same job is the more desirable alternative. I believe there are two necessary constraints, however, for this arrangement to be successful. First, you have to have a staff that is first rate. It must, of course, be large enough, but it also has to include individuals with whom you can share the decision-making process. Second, the position must truly be a part of the central administration. If this is not the case, there will be insufficient authority compared with the responsibility. Few graduate deans that I know have massive budgets with real discretionary options in spending them. To exert the sort of positive influence that is needed, the dean has to be a part of the decision-making process at the highest level, and this is especially true when it comes to the budget. Finally, it certainly helps to have the patience of Job, and the skin of a rhinoceros.

Concurrent Sessions

1. DISSERTATIONS AND THESES: ROLES IN GRADUATE EDUCATION

Presiding: Gillian Lindt, *Dean of Graduate School of Arts and Sciences, Columbia University*

Speakers: *Leila S. Edwards, *Associate Dean of Graduate School, Northwestern University*

G. Philip Manire, *Vice Chancellor and Dean of Graduate School, University of North Carolina at Chapel Hill*

†Serena Stanford, *Interim Associate Academic Vice President of Graduate Studies, San Jose State University*

Leila S. Edwards

The particular aspect of the doctoral dissertation addressed was the format: specifically, the acceptability of including published articles as the text, or as part of the text, of a Ph.D. dissertation. To establish an appropriate context for consideration of this topic, the philosophy of the Ph.D. dissertation was reviewed, both historically and at the present time. Clearly, there is general agreement that the Ph.D. is a research degree, and that its salient characteristic is the dissertation; the philosophy that the dissertation is the cornerstone of the Ph.D. has not altered over the last century.

A survey of current practices regarding dissertation format indicated that there is no comparable consensus regarding the *kind* of entity that should be acceptable as a doctoral dissertation. While a number of universities do accept published journal articles in place of the more standard dissertation format, support for this alternate format is found primarily in the life and physical sciences. Faculty in humanities and education most strongly oppose alteration in the traditional dissertation format. These differences in point of view reflect differences in doctoral research in the laboratory sciences versus the humanities and social sciences.

Following extensive deliberations during the 1985/1986 academic year, the Administrative Board of The Graduate School at Northwestern University concluded that submission of independently published articles as a dissertation was unacceptable; the dissertation must be an original and coherent contribution to knowledge that has a single focus, one set of data, and a consistent format.

It was concluded that the doctoral dissertation is in a state of evolution and

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*Abstract given here. Copy of complete presentation available from CGS Washington office.

†Abstract given here. A copy of the complete presentation is in the *CGS* Communicator *newsletter, Vol. XX, No. 1, January–February 1987 and is available from the CGS Washington office.*

adjustment, that support for changes in the format of the dissertation differs among the disciplines that offer doctoral programs, and that the evolutionary processes are not following common courses at different universities. It was pointed out that a series of ad hoc approvals for "exceptions" to standard dissertation format does, in fact, shape a philosophy of what a dissertation is or should be. Therefore, it is more desirable to discuss and evaluate carefully the issues involved in the doctoral dissertation than to adhere to the status quo while a new philosophy emerges as the result of a series of ad hoc decisions by the graduate dean.

G. Philip Manire

Since the end of World War II some truly revolutionary changes have occurred in universities concerned with research in the natural sciences and engineering. This began with the report of the Bush Committee to President Truman in 1945 by which it was determined that in the United States the major responsibility for basic research in those disciplines would be conducted in our universities.

The effect of these changes can be measured in terms of big money, large laboratory facilities, increasing interdepartmental and interdisciplinary faculty collaboration, the growth of the concept of postdoctoral education, the development of a real apprentice system for predoctoral education and training, and an almost incredible output of scientific publications.

From this has developed the "Natural Science Model" for the education and training of graduate students in biological and biomedical sciences, in chemistry, physics, engineering, geology and related disciplines.

Such research is expensive and must be developed over a long period of time which means the investigators must publish papers of high quality at regular intervals, seek funding from a variety of sources also at regular intervals, serve a national and international, rather than a local, constituency, and maintain a truly state-of-the-art facility. For all of this he/she must maintain continuity, which means recruiting good people and, to meet the requirements and purposes of the university, must be deeply devoted to and involved in teaching as well as research.

When I began my doctoral studies at the University of California in 1946, I had already completed many courses in bacteriology and had conducted a modest amount of research so my preceptor gave me a reasonable amount of laboratory space, we discussed the general nature of a possible research project, and I was largely left alone to work out the basic approach to the study, develop some of the techniques needed, and began work with a visit every two or three weeks upstairs to see the boss. Such a system for me was much fun, and its successful conclusion was a source of great satisfaction. Some areas and some laboratories still depend with varying success on this model of graduate student education in the sciences.

However, in many scientific disciplines not only is there an information explosion but also a technological one in which the experimental technology itself changes radically on a regular basis. I left my laboratory in biomedical research about ten years ago, reasonably comfortable with most of the equipment in the department. Today those labs are filled with machines whose utility is completely foreign to me.

So let us look briefly at what this has done to what I call the Natural Science Model for predoctoral training. In my ideal, and not unusual, model one will find one or more professors directing a laboratory consisting of two to six postdoctoral associates, two to six predoctoral trainees and one or more research technicians. The predocs usually move into the laboratory about the end of their first year of graduate study and stay about four years. The postdocs come usually from other laboratories and plan to stay a minimum of two and not more than four years. Consequently each year naive beginners enter the pipeline, one or two predocs complete their degrees and become postdocs at other institutions, one or two new postdocs arrive from other labs, and one or two postdocs receive faculty positions where they can, it is hoped, become laboratory directors themselves.

Thus this whole group of five to ten or more persons, at all stages of development will concentrate its efforts on a limited set of problems or a limited number of aspects of a single major research project. From this will come a continuous series of scientific reports published in international journals with a variety of configurations of authorship.

It is common in my own Department of Microbiology at Chapel Hill for a student completing the requirements for the Ph.D. to have been a co-author on three to six scientific papers, some as senior and some as junior author, and all of which may have appeared are in press in reputable journals. From these and other works he/she must put together a dissertation which gives credit in the preface for all the help received but which appears uniform in most respects, very much as did my own dissertation some 40 years ago. The student must, and should, defend this work in careful scrutiny by a committee of professors.

I believe that this is a remarkably effective model for the education and training of young scientists. I am not in the least concerned by multiple authorship and still, after years of lunch-time conversation, do not understand the aversion that many of my friends in social sciences, and especially in the humanities, have for collaborative work and joint publication with their students.

All of this leads me to the conclusion that a bound and stored dissertation in these scientific disciplines conforming to the above model serves little useful purpose. The student must work long and hard to produce a work that is not entirely his/her own; it will be read hastily by a group of professors who will have, perhaps more meaningfully, already read the published papers, and then by no one else. Such dissertations will be stored by the hundreds over the years in our over-crowded libraries.

None of the above should be construed as a proposal or an effort to do away

with the dissertation in those areas where a book or the equivalent of a book or at least the production of a book-length manuscript is a degree requirement. It is not expected that such a work by a student could or should be published prior to graduation. I would, however, not object if the manuscript and its resulting published book, should be the result of a joint effort by two or more persons, faculty and/or students.

In this regard, I have been much impressed by the "Report of the Commission on Graduate Education" published in the May 3, 1982 number of *The University of Chicago Record*. I have found this to be a remarkable report filled with much wisdom which, in effect, recommends the adoption of some of the Natural Science Model to the Social Sciences and the Humanities.

For example, and I quote from the report:

> The Case for a Research Institute Structure
> As a Context for Advanced Graduate Work
>
> At the University of Chicago, the Ph.D. is essentially a research degree. Our claims for this rest on the conviction that the ability to identify a significant problem, the discipline to inquire into the relevant issues critically and systematically, and the creative power to bring the inquiry to an effective conclusion, are developed and demonstrated in the course of the research and writing required for the dissertation. Yet paradoxically, while we insist upon the character of the Ph.D. as a research degree, we fail to provide a clearly defined institutional context for many students in the Humanities and Social Sciences Divisions who are at the research stage of their graduate school careers. In the natural sciences, students typically move into a research environment early in their graduate education (usually by the end of the first year). They develop their intellectual interests and sharpen their research skills by working in a laboratory or participating in a research group which provides a systematic and sustained context for their own work until the completion of the dissertation (and even for their further postdoctoral work). Their training is essentially a research apprenticeship."
>
> "By contrast, students in the Humanities and Social Sciences Divisions are typically in continuous contact with faculty only during their years of preliminary course work or, at best, up to the point of formal acceptance to candidacy. From that point on, aside from irregular discussions with their dissertation readers,they are all too literally 'on their own'. Instead of being drawn into the current intellectual debate in their fields, and stimulated by their teachers and fellow students, they often become prisoners of their dissertations with no appropriate place to work, and no real opportunity or impulse to expose their ideas or written material to critical discussion by their peers. So, for many graduate students in the humanities and social sciences, the second part of their career, which should be the most creative and exciting part, can easily become a lonely and unsupported chore."

I believe that the Ph.D. is a research degree, that to do research requires training by competent researchers, that faculty-student collaboration is highly desirable if not absolutely essential for this training, that joint publication is not unethical, and where other publication systems are available, that we may come to accept the idea that the dissertation as the work of a lone and lonely scholar is obsolete.

Serena Stanford

The California State University is the largest system of senior higher education in the nation with 19 campuses, over 324,000 students and 19,100 faculty. The CSU offers more than 1,500 bachelor's and master's degree programs in some 240 different subject areas, plus teaching and school service credentials. Within the California State Master Plan for Education, now 25 years old, the CSU is primarily a teaching institution; we offer only a limited number of doctoral degrees jointly with the University of California and with private universities in California. However, we grant a third of the master's degrees awarded by California colleges and universities. In 1985 alone, the CSU granted 9,100 master's degrees; historically, the master's degree represents approximately 20 percent of all degrees awarded by the system.

A survey of all 19 graduate deans was completed in October, 1986. The questions had less to do with numbers than with impressions of graduate deans regarding the thesis as a culminating experience. This type of information had never been aggregated before, so the cooperation from all 19 campuses was gratifying.

The thesis in graduate education within the California State University is a discipline-related option, an exercise in research depth rather than breadth, and is elected by students in substantial numbers (27 percent of all master's degrees) that exceed the proportion for whom it is a mandatory graduation requirement (15 percent of all master's programs). Thesis advisement is clearly supported by the faculty as a professional obligation but has only tangential connection to academic load within the system. It presents some quality control problems to graduate deans because there is no general policy regarding criteria for faculty who serve as thesis advisers. It is a fair guess, based on the consistency of its presence as a culminating experience in the CSU, that the thesis will remain a viable alternative in the forseeable future, in spite of the fact that the CSU serves a graduate student clientele for whom time is literally money. Most graduate students work full time, most are married with families, and the average age is 33; graduate study is a part-time activity for 80 percent of these students. There are some reasonable negotiations regarding appropriate faculty reward for thesis service that need to be pursued within the CSU system as a whole, but the thesis is *not* the intellectual anachronism that many graduate deans had feared.

2. GRADUATE EDUCATION FOR TEACHERS

Presiding: Mary Ann Carroll, *Dean of School of Graduate Studies and Director of Research, Indiana State University*
Speaker: Dean Corrigan, *Dean of the College of Education, Texas A&M University*

Mary Ann Carroll

It is my pleasure to welcome you to the sixth consecutive session, at annual meetings of CGS, on the role of graduate education in teacher education. These annual discussions and the continuing activities of the CGS and AACTE sponsored University Consortium on Graduate Teacher Education reflect the Council's recognition of the importance of quality schools to quality graduate education and the Council's commitment to its role in the preparation of the kind of teachers necessary for first-rate schools.

University Consortium on Graduate Teacher Education

Let me initiate my comments on the University Consortium on Graduate Teacher Education with a brief review of its history.

As many of you know, CGS was inspired to become involved in teacher education as a result of a panel discussion at the 1981 Annual Meeting on the topic: "Is Graduate Education Fulfilling Its Responsibilities to Primary and Secondary Education?" The panel members—Ernest Boyer, Gregory Anrig, Patricia Graham, James Rutherford and one of our speakers today, Dean Corrigan—unanimously responded to the topic with a resounding "No." Shortly thereafter CGS adopted a resolution confirming the importance of teacher education to our nation's welfare and accepting a role in the preparation of teachers. In 1982 the CGS Board approved a task force to work with an education deans' group on graduate teacher education. In 1983 the Board of the American Association of Colleges for Teacher Education voted to join our task force to form the AACTE/CGS Task Force on Graduate Teacher Education.

As I reported to you last December, in 1985 this group of eight deans—four graduate and four education—conducted a study of current master's degree programs for teachers at 15 institutions and sponsored a Wingspread Conference in November, 1985 for the education dean and the graduate dean of the institutions participating in the study. Again Dean Corrigan was invited to help us as we sought to understand current master's degree programs for teachers and to consider ways to improve them.

Wingspread I, as we now call it, was perceived so positively by the participants that it was agreed a second conference should be held, this time including

arts and sciences deans and input from master teachers. Therefore, Wingspread II was held last April and in a sense was historic. For the first time, to my knowledge, arts and sciences, education and graduate deans sat together and discussed desirable goals and components of quality master's degree programs for teachers. They reached a consensus on such things as: graduate education for teachers should reflect an integration of the academic field, liberal studies and professional education; institutional teams involving the graduate school, faculty from the discipline, education faculty and master school teachers should plan, implement and evaluate graduate teacher education programs; a research-based, analytical approach to learning and problem-solving should characterize graduate teacher education.

While such agreements were important, in retrospect it has become apparent to me that the most significant outcome of Wingspread II was the process for change that characterized that meeting. Three campus leaders of diverse units from a variety of types of institutions were able to interact and reach consensus on a number of issues about teacher education. Evidence that the interaction process tested at Wingspread II was a key outcome can be found in the eagerness of those present to continue to work together under the name of the University Consortium on Graduate Teacher Education.

Thus, the University Consortium on Graduate Teacher Education is a unique coalition of associations and institutions. The University Consortium is sponsored by CGS and AACTE and its membership consists of the leaders of the two sponsoring groups—Dr. Jules LaPidus and Dr. David Imig—and the graduate dean, education dean and arts/science dean from 15 institutions. For an institution to participate in the University Consortium for Graduate Teacher Education, those three deans—graduate, education and arts/sciences—have had to form a campus consortium. We believe such campus coalitions provide a powerful base for institutional change and quality enhancement. The University Consortium on Graduate Teacher Education is thus a bi-level consortium—a campus consortium of three deans and a national consortium of 15 campus consortia.

Institutional participants in the University Consortium were selected by the sponsoring organizations with the goal of including broad geographic and institutional-type representation. Thus the membership represents north/south/east/west, urban/rural, large/small, public/private, research/comprehensive and master's only universities.

Members of the University Consortium on Graduate Teacher Education are: Bradley University; California State University-Fresno; Central Washington University; Howard University; Indiana State University; Montana State University; New Mexico State University; New York University; North Carolina State University; Southwest Texas State University; University of Illinois; University of Kentucky; University of Oregon; University of Southern California; Villanova University.

By virtue of a proposal submitted by Indiana State University on behalf of the

Consortium to the Fund for the Improvement of Postsecondary Education, of the Department of Education, a planning grant has been secured to allow the Consortium to continue its work for the current year.

During 1986–87, Consortium efforts are being directed toward such things as 1) the redefinition of graduate teacher education and the clarification of what we believe ought to characterize it; 2) the expansion of the multifaceted nature of our Consortium—i.e. the inclusion of other professional and public partners; 3) the involvement of faculty from the 15 institutions in curricular planning using the process tested at Wingspread II; 4) and, to a very large extent, the increase in public and professional awareness of the University Consortium on Graduate Teacher Education and its work.

In spite of the growing interest by teacher organizations in controlling teacher education themselves, the University Consortium is firm in its position that the University *as a whole* is responsible for teacher education. The profession has a role to play in teacher education but it must not "own" it. Furthermore, as the Consortium seeks to project the character of graduate education for the preparation and continuing education of teachers—elementary, middle school, secondary and special education—the Consortium is determined to keep demographics sharply in focus that indicate teachers of the future must be prepared to work productively with increasing numbers of so called "at risk" students. Teachers must be able to find and cultivate talent in this group as well as among the more traditional students.

Wingspread III will be held for members of the University Consortium in March, 1987. We predict you will hear more of the Consortium from that time on.

For purposes of clarity, there are several additional comments I should make about the University Consortium. First and foremost I am eager that you realize we are not in competition with nor in opposition to the Holmes Group or any other national consortia. Some of our member institutions are or are planning to be members of the Holmes group and that is one reason we wanted them as a part of our Consortium.

We share with the Holmes Group a commitment to quality teacher education, a recognition of the need for institutions to work with schools in planning programs to improve teacher education; and a desire to develop graduate experiences for *career* teachers and not just for counselors and administrators.

We differ from the Holmes Group, whom we predate, in that we represent diverse types of institutions and we have not taken a position on whether certification should be at the graduate or undergraduate level. Institutional participants in our Consortium may be committed to certification at the undergraduate level, the graduate level or both levels. Because the University Consortium is developing a *process for change* as well as a product, we believe our work will be helpful to Holmes Group institutions and to institutions providing a variety of certification and continuing education programs for teachers. If you are interested in being kept informed of our activities between annual meetings, please

let me know. Also, if you have formed or are forming a campus coalition of the education, graduate and arts/sciences deans, I certainly would be interested in knowing that.

Dean Corrigan

Anyone familiar with the history of education could have predicted that the spate of reports calling for reforms in American schools would be followed with calls for reforms in higher education and most particularly reforms in the way teachers for American schools are educated.

At last count, thirty five national reports calling for changes in elementary and secondary education have followed the initial report by the National Commission on Excellence in Education, *A Nation at Risk*. At the state level over 200 blue ribbon commissions, similar to Texas' Select Committee on Public Education, better known as "The Perot Committee", have proposed numerous recommendations and the legislation to implement them.

In the past few months, eleven new National Reports calling for changes in higher education have hit the streets. Not surprisingly, several of these reports deal with needed reforms in teacher education.

All of the reports have implications for the preparation of science and mathematics teachers. They focus on how teachers learn to be teachers, ways to alter the conditions in which teachers work and strategies for making teaching a "real" profession.

Startling Difference in New Reports

There is a startling difference in the new round of reports. For example, the recent Carnegie Report titled *A Nation Prepared* represents a complete reversal from *A Nation At Risk*. Three years ago the rhetoric of reform focused on making schools more efficient and drew upon the "effective-schools" literature to argue for more controls and new methods of accountability. Little was said about work conditions for teachers or the need to invest in increased teacher salaries. The concern was with time, content, management, and state mandates.

In contrast, *A Nation Prepared* calls for teachers to rise up and revolt against the restrictions imposed by bureaucracies. It calls for a massive deregulation of schools—putting teachers in charge, providing them with resources, using space and support personnel creatively, and establishing a more professional environment for teaching. Such emphasis is a remarkable turnaround! It speaks of the impact that teacher leaders have had on the reform agenda and the power they command in shaping education's future. The key word in all of the recent reports on teacher education is *empowerment*, empowering teachers themselves to reform their profession and the settings in which teachers work. Carnegie's *Task Force on Teaching as a Profession* says it best,

> Textbooks cannot do it. Principals cannot do it. Directives from state authorities cannot do it. Only the people with whom the students come in contact every day can do it. Though many people have vital roles to play, only teachers can finally accomplish the agenda we have just laid out.

A basic assumption of the Carnegie Report is that reform through regulation does not work. Excellence by fiat is impossible. Excellence must be achieved the old fashioned way, by *people* doing hard work at the "grass roots" level together. What is needed is a "bottom up" rather than a "top down" strategy for change. The state should set the standards and then allow maximum options in meeting those standards.

Teacher Education As Top Priority Of The Best Institutions

In addition to being teacher-focused The Holmes Group Report, *Tomorrow's Teachers*, starts from the premise that the way to improve teacher education is to get the best graduate research universities in the country to make teacher preparation a top priority. The aim is to build some great schools of education which can produce the kind of leaders who can reform education at all levels. This approach assumes that the reforms in schools and universities will prosper if the best institutions are committed to them. It assumes also that teacher education programs will be different in these institutions for all the same reasons that make these institutions so academically powerful in every other respect. They are institutions that attract more than their share of the brightest students; they have the faculty who, on the whole, are the nation's most authoritative sources of information in their fields; they command substantial resources; and in the case of education, they are the institutions that have educated and will continue to educate the professoriate in education.

The Holmes Group also believes that a consortium of institutions that educate teacher educators is needed to ensure that the teachers of teachers do their graduate work in institutions that have exemplary teacher education programs. The Holmes Group is convinced that all departments in these universities need to work with their colleges of education and collaborating schools to bring about comprehensive educational reform. Therefore, a "sign off" is required from the Provost as well as the Dean of Education to hold institutional membership in The Holmes Group.

Instead of wasting time criticizing and pointing fingers across departments and across schools, the strategy recommended is to base educational policy on a positive image of excellence and high expectations for America's schools. High standards are recommended for entry into the teaching profession, and advanced training and performance appraisal are recommended for advancement up the career ladder in a new, differentiated staffing arrangement. This new professional differentiated staffing organization is viewed as a training model, a certification and licensing plan, a career incentive pay system and a different

way to deliver individualized learning programs to students. The Holmes Group proposes Instructors, Professional Teachers and Career Professionals. The Carnegie Report talks about Regular Teachers and Lead Teachers.

Holmes Group Goals

Since its inception, the Holmes Group has been supported by the Johnson Foundation, The United States Department of Education, the Ford Foundation, The Carnegie Foundation and the New York Times Foundation. It has five goals for transforming teacher education: 1) To make the education of teachers intellectually more solid; 2) To recognize differences in teachers' knowledge, skill, and commitment, in their education, certification and work; 3) To create standards of entry to the profession—examinations and education requirements—that are professionally relevant and intellectually defensible. 4) To connect colleges with schools, and 5) To make schools better places for teachers to work and to learn.

Even though most of the news releases on the Holmes Group Report have focused on the most controversial recommendation which calls for an extended program culminating in a master's degree after an internship, the report itself calls for a reexamination of all other aspects of teacher preparation. They include studies of (1) a reformed teaching field major for elementary and secondary teacher education candidates, (2) a reconsideration of minors appropriate for teaching at different grade levels. (3) the reconceptualization of a pre-education curriculum including a review of general education and the undergirding disciplines of the teaching profession, (4) the design of a supervised internship which integrates theory and practice and provides an opportunity to demonstrate competence prior to entry into the profession and (5) the development of effective professional continuing education programs for experienced teachers.

The "essence" of the Holmes Group's idea is that mastery of the tenets of a liberal education, a general education, the content of the teaching field(s), as well as the study of and disciplined practice of pedagogy, including an internship and other important aspects of the field of Education, will take more time than is currently available in the traditional undergraduate program. Thus, the traditional program must be reorganized and inevitably extended substantially—by about 25 percent. This reorganization and extension of teacher education into the post-baccalaureate level would mean, in most cases, that the deans of education would recommend for certification *only* persons who had completed a reformed academic major in their teaching subject, a true program of liberal studies, and a modern program of pedagogical studies. Demonstration of competence in all of these areas prior to entry into the profession is necessary to insure "safety to clients". Possessing the knowledge base to meet this safety to client criterion is as critical in the teaching profession as it is in medicine and law.

At the August, 1986 meeting of the institutions invited to join the Holmes

CONCURRENT

UNIVERSITY-INDUSTRY EDUCATION CONNECTIONS

GRADUATE EDUCATION FOR TEACHERS

THE MASTER'S DEGREE

SESSIONS

DISSERTATIONS AND THESES: ROLES IN GRADUATE EDUCATION

INTERNATIONAL EDUCATIONAL EXCHANGE: THE AMERICAN SCHOLAR ABROAD

PERSPECTIVES ON RESEARCH FUNDING

Group, most of the members supported a five-year program organization rather than the fifth year program model which calls for four years of baccalaureate study with a fifth year of post-baccalaureate professional study tacked on to the end. They felt the "tack on" approach did not provide for effective sequence and integration.

Furthermore, they felt that postponing all teacher preparation to the graduate level would force students to wait four years before finding out whether or not they want to choose teaching as a career. It is often at the sophomore and junior level that students are identifying their careers. Early field experience can help potential teachers evaluate their skills, aptitudes and desire to become teachers. Options should be available so students are able to come into a teacher education program at various points in their undergraduate or graduate experience.

Narrow ways of thinking about Master of Arts in Teaching (four years plus one), patterns in the past has produced a "hardening of the categories". Teacher education programs can be structured vertically as well as horizontally, (two years plus three, two years plus four, etc.). Prospective teachers should be able to study general education, a specific discipline or disciplines, and pedagogy and have direct experiences simultaneously. Each of these dimensions of teacher education can add meaning to the other as they are integrated into the professional culture of the prospective teacher.

There is general agreement among the Holmes Group members that current baccalaureate programs need major revision before they can be considered an adequate foundation for the post-baccalaureate phase of teacher education. The Holmes Group urges universities to strengthen education in academic subjects, sharply revise the undergraduate curriculum, employ liberal arts and science instructors who model fine teaching and who understand the pedagogy of their material, and organize academic course requirements and courses so that students can gain a sense of the intellectual structure and boundaries of their disciplines.

In the Holmes Group plan, students are admitted to the teacher education program as "cohort groups," and they proceed through their professional program as a class working together to become leaders in the teaching profession. The Holmes Group plan also makes a strong case for improving direct experiences. It states that current teacher education programs have insufficient impact on prospective teachers because what is taught has little transfer to classroom practice, and there is much that cannot be taught or cannot be taught well because of the place in which teacher education is conducted. One does not adequately learn to teach by just learning *about* it. It is necessary to develop a strong understanding of "theory in use."

Knowledge of children and youth, knowledge of a major teaching field, knowledge of the educational setting—school and society, knowledge of motivation and learning and human development, knowledge of teaching methods and modes of inquiry, knowledge of effective uses of instructional technology, knowledge of one's self, knowledge of educational evaluation and tests and mea-

surements, knowledge of the community and work with parents and knowledge of the teaching profession and the laws and ethics which guide it cannot be taught meaningfully in isolation of the complex problems to which they are to be applied.

Therefore quality teacher education must include programs and facilities for extensive *laboratory* and *field-based* experiences as well as for the more traditional approaches. Institutions which prepare teachers must have the program time, resources and facilities for making such experiences adequately available.

Creating Professional Development Schools as Partners in Reform

To accomplish goal four—the school/college connection, the Holmes Group proposes Professional Development Schools. The Holmes Group distinction is made that these schools would be "real world" schools unlike the university campus laboratory schools of old.

It is interesting to note that the Governor's Select Committee called for such a plan for Texas and suggested that these "schools" be supported by the state research and development funds as well as funds from the private sector. The intention of the Select Committee was to create "lighthouses" for other schools in the state which would go beyond the reforms proposed in "House Bill 72".

These Professional Development Schools, analogous to "teaching hospitals" in the medical profession, would bring practicing teachers and administrators together with university faculty in partnerships for the purpose of research and development and improved schooling. The Holmes Group envisions that "career professional" teachers in such schools would engage in "teaching, research, teacher education, and policy formation" as "clinical faculty" of the university.

Richard Lyman, former President of Stanford University made the case for this type of school/college connection when he said, "If our health and our access to fossil fuels are worth the intensity of research effort that we seem to be declaring that they are, surely the way we introduce children to the disciplined use of their minds is likewise worthy of attention."

The Professional Development Schools proposal would have a four-fold purpose in supporting university-school collaboration: (1) mutual deliberation on problems related to teaching and learning, (2) shared teaching, (3) cooperative supervision of prospective teachers and administrators (4) and collaborative research.

Further extension of the notion would support research and development efforts endeavoring to help each child succeed, develop continuous progress evaluation procedures, use the full range of community resources for learning, automate certain kinds of learning, and explore new instructional techniques for developing individual incentive, curiosity, creative thinking, and student inventions. Most of all, substantial effort would be given to the redesign of the entire teaching and learning environment from the curriculum through the "restructuring" of the school day and year. Through the Professional Development School

idea alternative academically sound programs could be provided *within* the public education system so that students, teachers, and parents could have *choices* without leaving public schools. The Charlotte-Mecklenberg School District in North Carolina and the state-supported Louisiana Residence Academy for Science and Technology are notable examples of such alternatives.

Helping to Create the Future

New alliances are emerging which can assist us in achieving the Holmes Group goals if we have the good sense to capitalize on them.

With a new report on education almost a daily event, education is in the spotlight. We have a "window of opportunity" that has not existed for some time. The public is clamoring for evidence on the effects of recent reforms and evidence to support new proposals. To maintain credibility as the training and research arm of the education profession, we have no choice but to respond, especially if we want the reforms to be rooted in the knowledge base that we have spent our professional lives developing instead of political expediency. In the process, we have the opportunity to play a significant role in the making of a profession.

Up to now, education has been a "many splintered thing." The most heartening news of this second round of reform is that members of different parts of the education system are realizing the importance of working together. We, in the colleges and the schools, are beginning to see ourselves in a common enterprise. We now realize that new directions in teacher education must be embedded in and consonant with equally innovative directions in school renewal. Major reform in one part of the system cannot occur without concurrent reform in the other.

Schools will not improve by merely changing programs in colleges and universities. If we prepare teachers with the latest knowledge and skill and then place them in work situations where they cannot use this knowledge and skill, we will simply produce more candidates for the teacher "drop out" list. Unless we can change the settings in which teachers work, giving them new techniques to individualize instruction will not do any good. As long as the content of teacher education cannot be used in the work place of the teacher, colleges of education will be viewed as out of touch and obsolete. No amount of change in college programs will change that fact. The quality of conditions in the work place have as much to do with the making of a profession as the quality of preparation.

Furthermore, the future of colleges of education in universities is inextricably interwoven with the future of teaching in the schools. Colleges of Education will get needed financial and moral support to improve training and research programs in direct relationship to improvement of the status of teachers in society.

And the status of teachers in society will improve to the extent that we use teacher education and research as instruments to create the conditions for professional *practice* as well as professional study. Goal five of the Holmes Group may be the most important goal of all.

LUNCHEON

CELEBRATING THE 40TH ANNIVERSARY OF THE FULBRIGHT PROGRAM

Presiding: Jules B. LaPidus, *President, Council of Graduate Schools*
Speaker: John Ziman, *Professor, Imperial College of Science and Technology, London*

John Ziman

"Tell Me, What Is Your Specialty?"

"What is your specialty?" How do you answer this question? It depends so much on the circumstances. Perhaps you are on a long flight, chatting with a not unattractive person strapped into the seat beside you. Will "Oh, I'm a sort of academic" be too off-putting? Or should you be a little more specific? "Actually, I'm a scientist" might sound slightly more interesting, suggesting a vocation rather than a mere profession. But even if the conversation became more serious and intellectual, it might be risky to admit to being a physicist. This happened to me once on a flight to Australia, and I had to deal with the electrical problems of his yacht for one person and cope with a scheme for perpetual motion from another.

Professor John Ziman addressing the assembly.

At an academic cocktail party, of course, the presumed spouse of a presumed colleague would at least expect you to state your discipline, thus firmly placing you in your faculty and department. "I'm in physics", you respond, hoping that he or she is into something more interesting than chemistry or civil engineering. Inside the Physics Department itself, everybody is supposed to know who you are, so the question would seldom be asked directly; but the new secretary compiling the faculty list for the student brochure might have to be told that you should be put down as being in solid state physics, rather than in another sub-discipline such as nuclear physics or plasma.

Imagine yourself now in Washington, at your first meeting of the NSF review panel on materials. You will be introduced as primarily a specialist in the field of the electron theory of metals, but competent to deal with the basic semiconductor theory as well. Over lunch you will insist that this is a slight exaggeration. For the past ten years, you say, you have been working on the electrical properties of liquid metals, and you have just come back from Grenoble, where you have been an invited speaker at the Third International Conference on this subject. In fact, it was a very useful meeting, as you were able to offer a job to a French post-doc who had just finished a thesis on the theory of the Hall effect in liquid transition metals at high temperatures—a problem area, where the band wagon was just beginning to roll.

The answer to the simple question: "What is your specialty?" is not so simple after all. It is rather like being asked "Where do you live?, and having to decide whether the answer should be "England", or "about ten miles from Oxford", or "Oakley. It's a small village halfway between Thame and Bicester", or "Little London Green", or "Number 27". When we were children, we were so excited by this discovery of our own individuality that we carved it on our school desks, adding, of course, that we were also on the Earth, in the Solar System, in the Galaxy, in the Universe. That is not necessary in Academia, which is united in believing that it is the only planet on which there are sentient beings. But it is a large planet, of which one can know only a very small area. By convention, it is divided into a dozen or so "faculties"—Science, Medicine, Law, etc. Within each faculty there might be ten or twenty Departments, each devoted to a distinct discipline. Each discipline, in turn, could be differentiated into, say, ten sub-disciplines. But even a sub-discipline, such as solid state physics, covers an immense range of knowledge. My guess is that it would have to be subdivided further, by another factor of ten, to get down to the area which an experienced scholar would come to know well. Unfortunately, there is no standard word for a domain of knowledge of this size. Throughout this lecture, I am going to refer to it as a "field", whether or not domains of this extent really could be defined naturally as coherent "subjects" or "problem areas" in a particular academic context.

It is a cliché that modern academic life is highly specialized. The specialities into which knowledge is fragmented for research are said to be innumerable. We now see that this is not quite true. Multiply ten "faculties" by ten departments,

by ten sub-disciplines, by ten "fields". It seems that a carefully chosen assembly of about ten thousand scholars would be competent to speak with authority on everything we think we know. Of course they would speak in raucous contradiction. With another couple of powers of ten one would get down to the ultimate level of differentiation—the number on the gate of that doctoral dissertation where the latest research problem might have been mastered. In that sense, each of us is the only real specialist on the particular question we are studying.

Academic specialization is nothing new. In every generation it is deplored, yet it grows continually narrower and more intensive. This is inevitable as long as the whole scholarly enterprise continues to expand in numbers and intellectual pretensions. More and more people are employed to discover more and more facts about more and more subjects. What can they do, poor lambs, but concentrate on gathering whatever crops will grow on the tiny patches of academic territory on which they happen to stand. After all, this must surely be the best that most of them could ever hope to put on show in the fiercely competitive marketplace of scholarly reputation.

Yes, we affect to scorn specialization—and yet we are utterly committed to it. Research is often a very personal undertaking, but in its outcomes it is a social product. In the production of knowledge, as in every other advanced industry, quality can be achieved only by the systematic division of labour. What we are trying to create is a closely woven garment, whose every thread is strong and supple—but each thread is of a different material, spun to a different thickness, dyed a different color, crimped to a different texture. Such threads cannot be mass produced. A lifetime may be needed to master the craft of making any one of them. It is only by the coordinated efforts of ten of thousands of such expert craftsmen that the garment can be woven to its full strength and use and beauty.

The primary means for the division and subdivision of academic labor is specialization by "subjects". As we have seen, academics define themselves, and are defined by others, in terms of the bodies of knowledge with which they are supposed to be familiar. Can we make this notion more precise? In the literature of the sociology of science, there is much discussion of the way that specialities emerge, or can be discovered, in the normal processes of research. Clusters of cognitive commonality are constructed by elaborate computer analysis of the way in which scientific papers are linked by citing the same words or other papers. These scientometric techniques may, in the end, give us a useful procedure for defining a specialty formally, but I suspect that we would get into a circular argument if we tried to link this definition with the concept of a distinctive "subject". We would start saying something like "A subject is a set of facts and ideas all connected with. . . . "—and then realize that this was just about the same as a co-citation cluster. In the end, we should probably come back to a set of terms that was not very different from a hand-made classification scheme constructed by a human indexer, based upon an intuitive grasp of the relevant cognitive entities.

Nevertheless, subject classification and specialization is used consistently and coherently in all academic work. Observations, experimental data, concepts and theories are classified for publication under subject headings. These headings appear in the titles of articles, journals and books. Academic institutions are divided and managed along the same lines. To be appointed to an academic post, one must become an authority on some subject, both by making research contributions to it and by being able to cite its literature. In some countries, such posts are firmly labelled by their subjects: "Lecturer in Quaternary Palaeobotany", "Reader in Sanskrit Poetry", "Professor of Quantum Chemistry", and so on. One will then have to teach one's subject to students, supervise research and attend conferences on it. One will be asked to referee papers and research grant applications on it, and represent it in the deliberations of a learned society. Younger scholars in the same specialty will respectfully request advice on their research and their careers, and there may be questions to answer about its industrial or military applications. In due course, one may even receive a public award for all that one has done for it, and go down to posterity as that great expert on the "Electron Theory of Metals", or whatever it was.

What I am getting at is that in most aspects of academic life each scholar is cast in a single, consistent social role—the role of the specialist in a particular subject. The institutions, the norms, and the ethos of Academia are neatly dovetailed together to make a setting for a community of individuals performing these roles in a wide variety of subjects. Whether we like it or not, this is how the whole system works, and it is difficult to imagine it otherwise.

I would not go so far as to say that this type of social organization is an absolute functional necessity for the advancement of knowledge. But original scholarship can never be an easy, routine job. It demands extreme concentration of effort over long periods, and extremely refined, thoroughly practiced skills. To see a little further than past giants, one has to clambor laboriously up onto their shoulders. For most of us, life is too short to climb more than one such monument.

Subject specialization is the driving force of professionalism. It gets the best out of people by setting attainable standards. Individuals compete directly with their peers, and are assessed by them, on the basis of their actual performance within a well-defined arena of techniques and ideas. They can take pride in the essential virtue of the sound scholar—reliability. What they tell us may not be of enormous interest, but at least it is real. The threads they spin may not be brilliantly colored, but at least they are strong.

At last we have reached the central theme of this address. Specialization is the heart and soul of scholarship. The question is:- what does it do to the hearts and souls of scholars? We affect to deplore it; is this because it distorts what we know or because it warps the knowers? What are its psychic benefits and disbenefits to the individual? Many scholars do not live all their days in Academia. What happens when their career paths lead them off into outer space, and they discover other worlds?

I have to say at once that I am not going to talk about those few scholars who seem to have been specialists from birth. From the earliest days they can remember, they have cared only for prime numbers, or ants, or the writings of Jane Austen, or the search for the site of Troy. All they ask of life is freedom to indulge their monomania. They may appear warped or emotionally crippled but they do not seem to suffer for what they never seemed to want.

The majority of scholars do not come into the world as specialists, but are made so by their professional formation. Over a period of ten or a dozen years, they have been filtered through successive stages of a narrowing funnel of education. The first stage might have been a choice between the humanities and the sciences. At the next stage it will have been necessary to give up chemistry, biology, and all the other scientific disciplines in order to specialize in physics. The decision to work in a particular sub-discipline such as solid state physics (rather than, say, nuclear physics) might be considered Stage III. This will be followed in due course by a fourth stage where a very narrow sub-field of research, such as the theory of the electronic transport properties of liquid transition metals, will seem to have expanded to occupy the whole mental horizon.

The actual phasing of these *rites de passage* varies from culture to culture. In Britain we continually deplore an educational tradition that encourages very early and rapid specialization. Many school children really do have to choose between "arts" and "science" at the tender age of 14, and celebrate the next stage at 18, when they are enrolled in a university course leading directly to "Special Honours Degree" in a single discipline. Three years later, if they do well in their exams and decide to go on to do a Ph.D. they will be pushed through a further stage of specialization in a year of perfunctory postgraduate courses, and then squeezed abruptly into the narrow space of a thesis topic. Yes, we do sincerely deplore the way we treat our young people, yet seem quite powerless to change our own peculiar customs.

Rumor has it that in other European countries they actually postpone the earlier stages of academic specialization by several years. As a result, their scholars and other professional people get a slightly broader school education than in Britain. It would seem, for example, that even the most magisterial of French historians would have had to show some competence with the differential calculus before entering the university, and a Dutch physicist at CERN could not be assumed to be quite as ignorant of European history as his British colleague. They also take longer over their bachelor degrees and doctorates than we do, but I get the impression that although these are deeper and more thorough than ours, they are not substantially wider in scope.

At a meeting such as this, I naturally hesitate to comment on the way that scholars are trained in the United States. It seems to be generally agreed, however, that your school education, although much broader and more diversified than ours, is seldom very rigorous. I understand, also, that your bachelor's degrees are not necessarily specialized, although it is not clear to me what weight you attach to elective minor subjects outside the block of major courses needed

to cover a departmental discipline. What I do know is that your graduate programs last longer than ours, and are both less specialized and more thorough. In your system, the final stage of academic specialization seems not to come until the student is already in his or her middle twenties, and then builds on a broader and more solid base at the level of a sub-discipline.

Nevertheless, in spite of cultural and disciplinary diversions along the way, the career path of every scholar must eventually pass through the long, deep, narrow defile of a doctoral dissertation. This is the means by which subject specialization is instilled and institutionalized throughout Academia.

It is not just that the would-be scholar has come at last to the front line of research, and must now take personal responsibility for the minutest details of fact or inference. The whole structure of the Ph.D. exercise is designed to reinforce a specialized approach to the advancement of knowledge. A well-defined scholarly problem has to be tackled and solved, starting from cold, in just a few years. That is feasible only if the problem is tightly framed. It must already be immanent within, and contained within, an existing sub-field, or sub-sub-field of learning. The required concepts, data and techniques must be within reach of an assiduous student, and capable of being taken on board in the short time available. It is a test of intellectual convergence. Divergence of mind, however valuable for the more experienced scholar, is merely distracting. Total concentration of effort within a bounded region is the order of the day, the week, the months, the years.

But it is not just contact with a particular set of documents, a particular shelf in a library, or a particular piece of apparatus, that makes a subject specialist; it is contact with a particular set of *people*. An academic specialty is not just a body of knowledge; it is a social institution. At first, this may involve no more than regular participation in a graduate seminar, vying with other graduate students for the approval of the professor. But soon there will be learned society meetings to attend. Remember that first ten-minute paper in parallel session 17, in room 34, at 3.45 p.m., just before the tea break; the audience includes some of the faces behind the names that have already become so familiar by citation. Their questions are not unkind, and over tea they discuss one or two points that did not come out very clearly in the paper. At last, the defile of solitary research is beginning to open out into the Promised Land.

It will take years to become fully established in that land. But from this point on, specialization is continually reinforced by socialization into the academic community. Each step up the academic ladder depends on enhancing one's reputation as a specialist on a particular subject. That reputation can be won only within a peer group—the "invisible college" of the specialty. The transactions that govern the internal sociology of science—the "recognition" that is exchanged for "contributions to knowledge", the critical assessment of such contributions, the respect accorded to authority, the protocols of citation, the competition for priority, etc.—all these transactions take place within the social space of each separate specialty, and seldom involve larger groups of people.

It is scarcely surprising, then, that the majority of scholars stay in the same specialty all their lives. This is well known from personal observation, although the evidence for it has never been collected systematically. It all depends, of course, on what is meant by a specialty. Let us take, as our measuring unit, what I have called a "field"—about one percent of the total subject matter of a major discipline. Such data as I can find—in particular, Professor Tom Gieryn's study of the careers of American astronomers—suggest that at least 25% of them had spent all their research careers within the area of one or two such "fields". About half the rest were just as narrow as this in the research they were doing at any one time, but over the years they had allowed their interests to "drift" slowly across the cognitive map. In many cases, indeed, this apparent drift was an artifact of the relabelling of subjects in the wake of cognitive change. A certain number of people—less than 10% in Gieryn's sample, but rather more in a set that included scientists of European origin with careers spanning the traumas of the Second World War—had migrated large distances across the academic map, only to become equally specialized in quite different "fields". Overall, only a small minority—perhaps 20%—had broadened their scholarly interests and expertise to such an extent that they were undertaking research on topics distributed over many "fields" within a whole sub-discipline or discipline.

Let me add, by the way, that there does not seem to be any particular connection between versatility and scholarly ability. Some of the most eminent scholars have been extremely narrow in their interests, while others have been remarkably broad. In every generation, of course, there are scholars of such prodigious learning and diversity of intellectual concerns that they are hailed as polymaths, but these are not necessarily the most fertile minds in all the fields that they cultivate.

Even the most blinkered scholar must, of course, have some intellectual competence beyond his or her research specialty. To do any sort of job as an undergraduate teacher, for example, one has to know a bit more about a discipline than one might have learned originally as a student. It requires some knowledge of an even wider domain to speak for a department or faculty in a more general institutional context, such as the university library committee or the student amenities committee. But this multi-disciplinary expertise is seldom taken into account in what scholars refer to as "their own work", in their curricula vitae, or in most of their activities on the national or international scene.

From the outside, an academic specialty may appear a somewhat arid domain of life and action. It is comforting, of course, to have one's own little plot on the academic map, in a named region that one can call home. What the outsider cannot appreciate is that this region offers psychological amenities that are not charted on any cognitive map. To extend the metaphor, it is the site of a *village*, clustered around a *marketplace* for scholarly goods. There one brings the produce of research, to be picked over and appraised before it is bartered for academic recognition. The village houses a small *community*, to which one belongs by right. The competitiveness and anomy of the vast world of Academia is re-

lieved by the feeling of being among friends—of being a known person in a small human group bound together by common intellectual interests, common practical problems, common traditions of thought and understanding.

This communal spirit is reinforced periodically by meetings of a *club*—the occasional conferences where progress in the subject is reviewed, and the senior members of its "invisible college" gather in conclave. The cosmopolitanism of such corroborees is astonishing. One's most immediate colleague is not the person in the next office down the hall, or even in the next university down the road. See them here on the conference photo: that learned man from Tokyo, that lively woman from Palermo, that clever devil from Adelaide, that ponderous person from Santa Barbara, that bright lad from Leningrad, that shrewd old character from Bangalore. In endless conversations in the local bistro, reputations balloon or are torn to shreds. There are also jobs to be filled, and resources to be allocated. The network of colleagueship ripens into alliances and friendships, or—as in any real village—festers into bitter rivalries.

Every specialty also has its *castles*. Their stout walls dominate the surrounding landscape. They may be only little castles, but each one protects an estate where its owner is without rival—the leading world expert on some particular aspect of the subject, or at least one of the three world experts on the subject, or at least the absolute expert on some particular aspect of the subject. Or, to change the metaphor, it is a *pond* where one can eventually grow into the biggest frog, with the most threatening or beguiling croak.

Scholars are, alas, very susceptible to the sin of pride. But vanity is not the only motive that attaches them so firmly to the tiny topics which—quite by accident—they have come to call their own. To the outsider it is always surprising how completely scholars commit themselves to seemingly uninteresting subjects, and how vehemently they defend their views on seemingly trivial issues. How could any sane person get so excited about, say, the classification of woodworms, or the political leanings of 18th century Shropshire parsons, or the interpretation of electron localization in amorphous semiconductors in terms of percolation theory? The fact is, however, that a specialty is the site of a *workshop*, where technical virtuosity is valued for its own sake. It imposes its own standards of excellence on those who work in it. What Gerald Holton has called the "Apollonian" scholar gets a peculiar satisfaction from this discipline, this exercise of exquisite craftsmanship in a microcosm. The acclaim of colleagues is merely confirmation that one has indeed achieved those impossibly high standards.

Another amenity of a specialty is that it provides a *quarry* for research projects. However deeply one goes into any scholarly question, one always finds more questions for further study. Scholars appreciate their autonomy, their freedom to undertake research on problems of their own choice. This autonomy is particularly gratifying if that choice is exercised in a field that seems narrow to the outsider, but which expands to a whole universe for the specialist.

The outsider's view of a scholarly specialty is thus quite misleading. For those

inside it, it is rich and fruitful domain. We often forget that all scholarship is drudgery, and all scholarship is fascinating. Research on the structure of the universe turns out to be just as laborious and tedious as research on the structure of coal. Conversely, the minute problems that exercise the mind in the latter field can be just as "exciting" as the questions that hit the headlines when the origins of the cosmos seem to be at stake. Science, as Medawar remarked, is the art of the soluble. Every field has the fascination of a good crossword puzzle, which must, surely, yield to our attack if we go on long enough.

Sustaining the attack! Yes, persistence is one of the prime scholarly virtues. But it is also a psychological peril. One of the sad realities of scholarly life is the promising career that runs into the sands. An established scholar of good standing is seen to "go stale". The flow of publications dries up, communal activities are ignored, and specialized academic responsibilities such as the supervision of graduate students are rejected. More general psychological pathologies may also develop, such as withdrawal from the company of colleagues or gross neglect of teaching and administrative duties.

The etiology of this syndrome must surely be very complex. But it is often associated with extreme specialization over a long period—with what Daryl Chubin has called *undue persistence* in a narrow field. Why should this be such a danger and can it be avoided? The primary reason is straightforward. The maps of scholarly activity are not graven on stone. A "subject" cannot be relied on as a permanent feature of the intellectual landscape. Just as it came into being through some discovery, some breakthrough, some problem posed for the first time, some area of research opened up by a new technique or concept, so it may fade away when it seems to have been adequately explored, or its problems seem to have been effectively solved or its practical applications seem to have been fully exploited. Detailed inspection of classified subject indexes reveals many deserted villages whose inhabitants have moved elsewhere, building new communities on virgin, uncultivated soil.

This is not just a consequence of spectacular breakthroughs that make hard-earned skills and expertise obsolete overnight. Cognitive change is the vital force of scholarship, and is taking place all the time, on every scale. On the largest scale, the slow process of redrawing the boundaries of a whole discipline or subdiscipline seldom threatens the allegiances of a long personal career. For example, my former specialty of "condensed matter physics" is as much alive now as it was when I came into it, nearly 40 years ago. But the smaller the area defined as a specialty, the shorter its life as a recognizable entity. My guess is that a typical specialty of the size of what I have called a "field" has a lifetime of about twenty years. In that time it either expands so much that it has fallen apart into several new fields with many novel features, or it decays until it is no longer the site of an attractive and coherent research program.

What this means is that scholars of forty or so may have to face the fact that they have given themselves for life to a dying specialty. If they have not already yielded to the winds of change, by navigating confidently among the tides of

new concepts and techniques, or by deliberately setting sail for new shores, then there is a grave risk that they will simply run aground. To return to the village metaphor:- the amenities on which they have relied will begin to decay. The market will no longer be buoyant with novelties. The club will decline into a bunch of old cronies. There will be little reputation worth defending within the castle walls. Worst of all, the soluble puzzles in the problem quarry will begin to seem trivial, while the difficult ones will loom as insoluble.

We often observe other people walking into this pitfall, but we are seldom aware of it under our own feet. The traditional amenities of scholarly life—academic tenure, basic research facilities, and autonomy in the choice of problems—conspire to screen us from obvious occasions for a major change of subject. Research projects intertwine, so that there always seems something to finish before we could contemplate making a clean break. There are professional responsibilities to graduate students, to colleagues, to learned societies, and to journals. Above all, there is our hard won reputation to think of. Would we not be giving up the credits accumulated in half a lifetime of research, and going into the world again as naked as any graduate student?

Nevertheless, in spite of these psychological barriers, it is imperative to make a radical move before the initial symptoms of undue persistence become irreversible. The same barriers stand in the way of any established scholar obliged for any reason to make an abrupt change of specialty. External circumstances, such as enforced change of employment, failure to get a research grant, or managerial decision are all too common nowadays in scholarly careers. It is hard to leave the village where we were born as a scholar, yet the pathways to other villages are not all closed. The stereotype of the *subject* specialist does not do justice to the actual research skills that an experienced scholar may have acquired over a period of twenty years or so. I recall an agricultural researcher to whom I once talked. He explained that his specialty was the uptake of potassium by the roots of plants in clay soils, and he didn't think he could make a living at anything else. But later he mentioned that, although he had begun life as a botanist, he had, of course, had to learn a great deal of inorganic chemistry. Then, some fifteen years ago, there had been a revolution in experimental techniques, and he had had to teach himself electronics to keep in the field. More recently, some competitor had begun to build computer models of the systems they were studying, so, nothing for it but to take an elementary course of Basic at the local technical college and write his own programs to prove the other fellow wrong. Finally—almost as an afterthought—he remarked that this was not the sort of research that one could really do in the lab, so every now and then he had to put on his Wellington boots and trudge across the fields with the farmer, explaining exactly how to plant the crops he was studying.

As this example suggests, a narrow subject specialist can be a latent Admirable Crichton, the sort of person one needs beside one on a desert island able to do many things quite passably well, and already competent to move in any one of a number of directions into new scholarly fields. It is well known that

much research nowadays is essentially interdisciplinary, indicating that it stands at the junction of several different specialty regions. But the official maps of knowledge, organized hierarchically and classified decimally by librarians, do not show all the roads and paths that crisscross the landscape—or the tunnels into third and fourth dimensions which link apparently disparate fields of enquiry.

A radical change of specialty may thus turn out to be much less traumatic than it appeared in prospect. It is difficult from the outside to see the open spaces in an unfamiliar territory; it is also difficult to estimate one's capacity to make one's way into these spaces and occupy them. But a scholar of forty or so is not a graduate student, trying to learn an entirely new attitude to the acquisition of knowledge. He or she is a person who already "knows how to do research"—a complex of tacit skills, akin to "management" skills, which apply in every field of scholarship. The experienced scholar taking up a new problem knows, for example, that talking to the right experts is more useful than reading the right books. He or she also knows that an intellectual specialty cannot be fully mastered intellectually. Instead of trying to read it all up, the best thing to do is to roll up one's sleeves and get down to work on an actual problem in the laboratory or archives. It is essential to plunge in naively, just to get the feel of the real difficulties of the subject from the inside.

In fact, it is quite surprising how quickly a mature scholar can move into a new field of research and make some progress in it. Many that I have talked to about this reported that it was very hard work, but that it took only a year or so to be accepted as genuine inhabitants of the new village they had entered. They also reported that the experience had inspired and rejuvenated them. Of course, there are many who fail to meet this challenge. In some cases, they may have already gone too far down a mental cul de sac into staleness and anomy. In any case, elementary folk wisdom suggests that there are a certain number of people who are constitutionally unable to adapt to new circumstances. Some scholars manifest a peculiar rigidity of character which resists all forms of personal change, despite the support and encouragement they could be getting from those around them. Does the scholarly vocation attract people of this disposition, and simply confirm them in it, or does it, by its very nature, inhibit an attitude of openness to life and its vicissitudes? These are interesting questions for deeper study, but I would not dare to offer any answers to them.

What I do think, however, is that extreme academic specialization not only damages scholars emotionally; it also damages them intellectually. They become accustomed to plodding along in blinkers, looking neither to right nor to left. Everybody knows the importance of making connections between areas of knowledge that were previously thought to be unrelated. Nuclear physics is connected to historical research, through the techniques of carbon dating. Computer studies of artificial intelligence become significant for neurophysiology. The sequencing of DNA opens up new vistas in evolutionary taxonomy. These are notorious examples of a process that is continually occurring in detail, all over

the map of knowledge. Yet the specialist in a small area who is expected to know only what is already in that area is not open to influences that might have come from adjacent areas, or even from much further away on that map.

A specialty is a parish; it cannot help being parochial. Sheer lack of interest in the activities of neighboring parishes is forgivable; prejudice against them is not. Unfortunately, a peculiarly narrow form of loyalty is almost institutionalized throughout the academic world. Pride in the achievements, and commitment to the research programs, of one's own specialty is transformed into scorn and denigration of other specialties. Humanists scorn scientists—and vice versa. Natural scientists scorn technical scientists—and vice versa. Physical scientists scorn biologists—and vice versa. Physicists scorn chemists—and vice versa. Theoretical physicists scorn experimental physicists—and vice versa. Theoretical solid state physicists scorn theoretical nuclear physicists—and vice versa. Theoretical solid state physicists working on electron theory scorn theoretical solid state physicists working on lattice dynamics—and vice versa. Electron theorists working on metals scorn those working on semiconductors—and vice versa. To the outsider, it is astonishing that such animosities can arise over such trivial details of concept, subject matter or technique. Perhaps this is only coffee table talk, which is not to be taken seriously. Nevertheless, it is symptomatic of the petty prejudices that close people's minds to unfamiliar ideas. Whether in a conversation among yokels in a village pub, or in a seminar for a selected group of scholars in an elite university, small-mindedness is the main obstacle to enlightenment.

Specialization benefits scholarship by dividing the labor of research into manageable stints. But it has its costs. Is the traditional role of the individual scholar as a subject specialist now being superseded by a more eclectic type of expertise? In the natural sciences and their associated technologies, sheer knowledge of the contents of a particular shelf of books and journals in the library may no longer be the primary stock-in-trade of the researcher. Problems drawn from the practical world of industry, agriculture, medicine, etc. do not define themselves neatly on the subject map. The ideas and techniques that may be needed to carry a project forward often come from many different sources. The expert researcher has to have a nodding acquaintance with many different subjects, and be willing to read further into them and apply them to the problems in hand.

Nowadays, a competent scholar in mid-career seldom works alone. He or she is likely to have become the leader of a project team, with members drawn from several disciplines. A wider view is needed, to integrate this diversity of skills into an effective research instrument. At higher levels of research management, the need to be a scholarly "generalist" becomes more and more evident. Only a small proportion of those who set out on scholarly careers become faculty deans, or college presidents, or directors of national laboratories, or research managers of industrial firms. But those who do rise to such worldly heights have to deal with issues that transcend the boundaries of any scholarly specialty, however broadly defined. In other words, they have to acquire a world view that brings

together the contributions of hundreds of specialists whose individual achievements they could never hope to master in detail.

Modern scholarly institutions involve a great many other administrative tasks which call for general intellectual awareness rather than highly specialized knowledge of particular subjects. Every graduate dean will understand just what I mean by that. It is essential to know, for example, just where the work of each student and professor fits into an academic framework involving many departments and disciplines. And the indispensable technical services provided by librarians, computers, large-scale experimental facilities, etc. require quite different types of specialists with scholarly skills which cannot be located on the traditional maps of knowledge.

It is true that many scholars pass their whole lives happily enough as narrow research specialists without the distractions of administrative responsibility. Unfortunately, a few of them acquire such eminence that their opinions are sought on all sorts of subjects of public concern. It is then that the limitations of their understanding of scholarship itself become embarassingly obvious. The wisest of them modestly admit their incompetence. But there are some who are always ready to volunteer firm views on matters of which they are profoundly ignorant. Taken for great minds by the world at large, they pontificate on politics, on education, or even on the other branches of learning. Is this decline into punditry simply due to natural human vanity, or is it a peculiar product of their highly specialized training? A successful career in their own tiny field ought surely to have taught them the importance of genuine expertise; instead it seems to shut their eyes to the existence of equally genuine bodies of expertise in other fields.

Teaching specialties are, of course, wider than research specialties. A graduate program that tries to cover a substantial body of knowledge cannot do so by the aggregation of lectures and seminars separately covering each of its component fields. At least some of the teachers must have a comprehensive view, taking the whole of a sub-discipline or discipline as their "specialty". As one climbs back down the educational pyramid, the base of knowledge becomes broader and broader At each level, every teacher needs to have some appreciation of all that the student is supposed to be taught at that level.

Yet the ideology of academic specialization denigrates the generalizing work of the university teacher, dropping research in order to put together a lecture course or a student textbook out of "secondary sources". This disdain is ill-advised. It is true that new ideas usually arise out of minute and specialized investigations for which extreme subject specialization is appropriate. But what we learn by crawling along the frontier of knowledge with a magnifying glass is quite meaningless unless it is integrated and re-integrated into conceptual maps covering larger and larger areas. The work of integration is fundamental to scholarship, but is not always recognized as such, for it takes many forms—preparing seminal lectures, writing review articles and treatises, editing review journals, designing new teaching curricula, and managing new research initiatives. It should not be left to editorial committees or colloquia proceedings of

mutually uncomprehending subject specialists, or to old fogeys who are pretty well out of touch, or to young fogeys sitting in airplanes on the way to the conferences where they are to give their prestigious review lectures.

Advanced scholarship is a social institution founded on detailed subject specialization. But that does not mean that each scholar must stay within a single narrow specialty all his or her working life. We should not be dismayed at the emergence of a new style of scholarly career, as specialized as ever in its earlier stages, but often broadening or diversifying in later years. The trouble is that a very high degree of *permanent* subject specialization is taken for granted throughout the scholarly world. Because this attitude is unquestioned, from the Ph.D. onwards, it is embedded in the persona of every scholar, and inhibits positive manifestations of intellectual versatility. The traditional stereotypes of the academic life are no longer properly matched to the careers that scholars now have to follow.

People cannot be engineered to fit perfectly into social roles, especially when these roles are still evolving. Times have to change, and most people are remarkably skillful at adapting to them. In my own study of these problems, it was heartening to observe the sturdily affirmative response of scientists in their forties whose expectations of living out quiet, highly specialized research careers had been blighted by events beyond their control. They are, after all, much better off than unskilled workers thrown out of their jobs by the vagaries of international trade and high finance. In many cases, indeed, the enforced change may have saved them from the slow decline into undue persistence which is the fate of so many academic specialists.

At a meeting such as this, we are bound to suppose that graduate education is the key factor in making scholars more or less adaptable in their later careers. But there is a lot of life to be lived beyond the Ph.D. and much experience to be gained before a scholar is fully formed. The traditional pattern was for a graduate student to continue his or her thesis topic into post-doctoral research and beyond. Sharper competition for academic posts is forcing many young scholars to diversify their research interests, and to take what is available in a series of temporary jobs in various fields until they finally settle down. This can be very disheartening and damaging if the changes of subject are too frequent, but a scholar who has had to learn many new things at this stage gains confidence in his or her ability to make further changes later on in life. Indeed, many industrial firms deliberately give their technical recruits a succession of diverse research tasks, to encourage them to think of themselves as versatile people able to move, if required, from field to field.

It is normal nowadays for scholars to spend a lot of time working with others on interdisciplinary projects. This can be a very broadening experience. At first, team members think that all they have to do is to contribute their own valuable expertise, and that then all the different pieces of the jigsaw will jump into place. But as the project proceeds, each participant receives from the others a variety of perspectives on a concrete problem, and comes eventually to appreciate the

real strengths and weaknesses of several different scholarly disciplines and research techniques.

On the other hand, professional advancement has become so competitive that there are fewer and fewer opportunities to talk at leisure with scholarly contemporaries in other disciplines. Collegiality is a primary function in scholarship. Contact with ideas from distant regions of academia is mediated by social contact with people who carry these ideas around inside them and bring them out in conversation. One of the depressing features of a very large academic institution is that each individual is surrounded by immediate colleagues of a rather similar persuasion—members of the same sub-discipline or academic department. I personally had the great advantage, in my thirties, of being a member of a Cambridge college with about 100 Fellows. Their interests ranged from English literature to molecular biology, from medieval history to plate tectonics. Through the college responsibilities and social activities that we shared, it was possible to get to know each other both as people and working scholars. We need more bridges like these, from island to island of our academic archipelagos.

Formal graduate education is thus only one of the experiences that can broaden or narrow the career path of a scholar. Unfortunately, most Ph.D. programs are grinding mills designed to produce finely divided research specialists. There is no way of using them to reverse this process and turn out coarsely aggregated "generalists". In any case, this would take time, and graduate students already spend too long at school.

We need to think much more subtly about what might be done. There is no point in trying to broaden the curriculum by insisting that graduate students take courses on a wider variety of subjects if these courses continue to be taught as if to research specialists. For example, as a scientist with strong personal leanings towards the social sciences and humanities, I am not impressed by schemes for giving science students occasional doses out of those other academic bottles to cure them of scientism, or cultural illiteracy. Nor do I have much enthusiasm for additional courses on the history, philosophy or sociology of science if these are taught in isolation as metascientific academic disciplines.

If our students are to become more generalized and integrated intellectually and professionally, then they need something that starts from their chosen specialty and generalizes and integrates it into larger domains of knowledge and action. This can be done, for example, by first leading them gently into an adjacent multidisciplinary region and then taking them on a tour of some of the other ways of looking at the world. This is why I have long been an advocate of "Science and Society" courses for science students—and for non-science students also. They provide a natural medium for travel into a variety of fields of academia and of the real world, not necessarily to learn specific answers to specific questions but as a tour of the horizon, as an introduction to the bestiary of the intellectual forest, and as an occasion to rehearse some of the issues that they may have to face in earnest in later life.

This lecture has been too long on diagnosis, and too short on therapy. But we

are only just beginning to realize that extreme scholarly specialization is worse than deplorable; it may, in the end, damage the health of those who indulge in it unduly. I started with the personal question, "what is your specialty?", and tried to show the personal implications of the answers it elicits. Perhaps the remedies we seek will spring to mind if we start asking scholars a slightly different question—"what do you do for a living?"—as if they were not really all that different from people in other callings.

PLENARY SESSION II

MINORITIES: SUCCESSES AND PROSPECTS FOR THE FUTURE

Presiding: John B. Turner, *Assistant Provost and Associate Dean of Graduate School, Massachusetts Institute of Technology*

Speakers: Martha Conley, *Coordinator of Student Programs, National Consortium, GEM Program, Notre Dame, Indiana*

Betty M. Vetter, *Executive Director, Commission on Professionals in Science and Technology, Washington, D.C.*

Sarita E. Brown, *Assistant to the Dean and Director, Graduate Opportunity Program, University of Texas at Austin*

George Koster, *Professor of Physics, Massachusetts Institute of Technology*

Martha Conley

Graduate Engineering for Minorities Program (GEM)

There is good news and bad news regarding graduate engineering for minority students. The good news is that there has been growth at the master's level. The number of minority students who received master's degrees increased from 2.5 percent in 1985 to 3.1 percent in 1986. The bad news is that even at 24 percent growth, the numbers are far from reaching parity. The news is even more discouraging at the doctorate level where degrees earned among minorities in engineering showed no growth—an alarming situation considering the fact that in the next ten years 20,000 new professors will be needed at the nation's universities.

The need to recruit minority graduate students today is just as crucial as it was ten years ago. It was thought formerly that students interested in going to graduate school would apply without external influence. The GEM experience has found this to be untrue in the case of minority students, just as the assumed minority student lack of interest in graduate work because of a desire to earn money immediately proved to be a false generalization. The high minority student interest in pursuing graduate work is evidenced by the 1,400 applications GEM has received for 250 fellowships during the past two years. What GEM has found is that many are not given a reason to go to graduate school, few understand the admissions process, and most importantly, there is a lack of knowledge about available financial resources.

Concerted recruiting efforts, and corporate and university support between 1976 and 1986 have resulted in the sponsorship of over 400 minority engineering graduate students at the master's degree level. The number of GEM students has grown steadily in that time. Of the GEM fellows who began the master's program, 86 percent completed with a degree under GEM sponsorship. Ten percent have continued for the doctorate and nine percent continued with other support.

While growth has been steady at the master's level, there is concern about the future of minorities in engineering and the sciences. Projections by the Department of Labor show that by 1995 there will be a 30 percent drop in the number of college-age students in this country. Of the students who are college age in the year 2000, approximately 40 percent will be minority students. If minority students continue the current pattern of enrollment in non-academic track math and science courses, there will be a shortage of American citizens eligible for engineering disciplines in the next decades. Currently only 46 percent of black students enroll in geometry and 22 percent of American Indian students enroll in algebra II. This is compared to 60 and 38 percent, respectively, for white students. The same patterns hold true for the advanced sciences when comparing minority and majority students.

In an attempt to motivate and inspire teenagers to view the sciences in a positive manner, and to take control of their future through planning and preparation while in high school, a 13-part television series is being developed for airing by public television. The program, entitled "Journey," is designed to awaken in the young viewers a vision of and a desire for the world tomorrow. "Journey" is a fast-paced motivational, informational and musical television series designed to encourage students to pursue careers in science and engineering. It will help young people see the need to examine career options and choices in the science and engineering professions now, and to care about their course selections and mastery of course material today in order to fulfill their dreams for the future.

While major efforts of the Graduate Engineering for Minorities program are at the graduate level, there is continuous involvement at both the precollege and college levels. The importance of developing technical interest and talent early is a major concern. "Journey" is viewed as a link to future professional talent. Students are encouraged to participate in academic and job-related activities. Interest developed early has sustained many students through completion of the graduate degree. In this technological society, the graduate degree offers more flexibility, diversity and opportunities throughout a professional lifetime.

Betty M. Vetter

The Talent Pool For 1990 And Beyond

I'm going to look briefly at the prospects for future graduate enrollments of minorities, particularly in science and engineering, by examining the nature of the talent pool for 1990 and beyond, the present enrollment of minorities in graduate school, and their present graduate degree attainment.

- We can see the changing nature of the melting pot that makes up our nation by looking at some population data. In 1984, we were 75.5% white, non-Hispanic, 11.7% black, 7.2% Hispanic, 1.9% Asian, 0.7% American Indian, and 3.0% foreign citizens. Our elementary school population, how-

ever, was less white and more black, Hispanic, and Asian, and these trends will continue very rapidly over the next decade.

Already, minorities continue the majority of school enrollments in 23 of 25 of the nation's largest cities, with the Hispanic population growth forecast to be the fastest of all groups, principally because of immigration, and black population growth the next fastest. We can see this best by looking at births in the United States.

- Among the 3,612,258 babies born in the U.S. in 1980, 72% were white, non-Hispanic, 16.3% were black, 2.3% were Asian, less than one percent were American Indian, and 8.5% were Hispanic. These children started first grade this fall.
- Birth rates for U.S. mothers in 1980 vary significantly within these populations. The number of births per 1,000 women aged 14–44 was 14.2 for white, non-Hispanic women, 26.5 for black women, 13 for Asian women and 23.5 for Hispanic women. The national birth rate in that year was 16.4.
- Even if we ignore the effects of immigration, which further increases the minority proportions and particularly the Hispanic proportions at this time, and we project these 1980 birth rates out for a decade, we find that the babies born in 1990 will be only 64.5% white and non-Hispanic, while 22% will be black, 1% will be American Indian, 10.5% will be Hispanic and 2% will be Asian.

If we carry the projection out for a second decade, to the year 2000, we find that only 55.9% of the babies born to U.S. mothers would be white, non-Hispanic; 28.8% would be black, 1.1% American Indian, 12.6% Hispanic and 1.6% Asian. Of course, these proportions will also change with immigration, both legal and illegal, and the present increase in Hispanics from that source is so high that the number of Hispanic births may exceed the number of black births even by 1990.

The point of this exercise is to demonstrate how essential it is that we increase educational opportunities and encouragement for our minority youngsters; because if we follow the patterns of the past two decades, losing most of the potential minority talent, there won't be enough non-minority talent—and particularly white male talent. There is far more than a moral issue of fairness at stake. Our survival as a world leader is involved.

- At each successively higher level of educational attainment, we find a smaller proportion of each minority group. U.S. blacks, who are about 12% of the population, earn only 6.5% of the bachelor's degrees, 5.8% of the master's degrees and 3.4% of the Ph.D. awards. For Hispanics, the situation is similar, except that we lose half of them even before high school graduation. The dropoff for American Indians is not quite so great, and Asians appear to increase their proportions at higher degree levels, although much of that increase seems to be due to recent immigration.
- In the areas of science and engineering, minority representation is even lower, as is the representation of women. I include women in this group

because they are as much an underutilized talent resource in science and engineering as are minorities. Although they are more than half the U.S. population, women earn only a fourth of the science and engineering doctorates awarded, and U.S. blacks, Indians, and Hispanics combined earn only three percent.

- The situation is far worse if we look only at the natural science degrees—the biological, mathematical and physical sciences—and engineering. At the bachelor's level, the representation of blacks, Hispanics, Indians and women is only about one-third of their representation in the 22–24 year-old population. Asians, on the other hand, are represented twice as frequently among science and engineering bachelor's graduates as they are among 22 year-olds. However, many of these Asian graduates may not be U.S. citizens.
- There is a further dropoff in graduate school. Graduate enrollments indicate that about half as many blacks, Hispanics, and Indians from the baccalaureate population enter graduate study in these fields, as do whites. For women, the dropoff from baccalaureate degree to graduate enrollment is one third greater than for men. The proportion of foreign students also increases in graduate school.
- There is some, but not a great deal, of attrition in graduate school prior to the master's degree. However, at the master's degree level, representation of the under-utilized minority groups has dropped by about half from the bachelor's level.
- Doctorate representation drops still further for all minority groups for these fields. The numbers are so small, that the physical, math and computer science degrees have been combined, and the lower scale doubled, in order to be able to see the small differences. Only 75 U.S. blacks, 76 U.S. Hispanics and 5 American Indians earned a doctorate in 1985 in physical science, mathematical or computer science, or engineering, contrasting with 2,477 foreign students on temporary visas who earned Ph.D.s in these fields.
- Although the numbers are small, and the proportions of degrees earned by minorities are well below their proportion of the population, we could take more comfort if the situation were improving steadily. But despite a decade of affirmative action, neither the numbers nor the proportions of U.S. minorities earning Ph.D.s have improved substantially. Indeed, in one case, progress is downward! Blacks who are U.S. citizens earned 999 Ph.D.s in 1975, and only 909 in 1985, dropping from a peak of 1,056 in 1979. American Indians earned 36 doctorates in 1975, rising to 93 in 1985. For Hispanics, the numbers increased from 304 to 559 during the decade, and for Asian American citizens, from 286 to 515. However, even among non-black U.S. minorities, the changes are not large as a percentage of total Ph.D. awards. Indeed, even in 1985, U.S. universities awarded three times as many doctorates to foreign citizens as to U.S. minorities.

- The picture is even sadder in science and engineering. Except for Asian Americans, representation of U.S. minorities is well below their representation among all Ph.D. recipients. In these totals are included the social and behavioral sciences. If these specialities are removed, the number of U.S. non-Asian minority recipients drops by approximately half. In 1985, U.S. blacks, Hispanics and American Indians combined earned 275 Ph.D.s in natural sciences and engineering, and 311 in the social and behavioral sciences.

Looked at in terms of national needs, most forecasts of supply/demand balances over the next decade indicate that the U.S. will probably have enough scientists and engineers to meet its needs, assuming we continue to utilize our foreign graduates, who now earn more than 26% of all science and engineering Ph.D.s awarded by U.S. universities. There will be enough Ph.D.s overall, despite continued shortages in some fields such as engineering and computer science, to meet our needs until the mid-1990s, when demand for more college faculty will coincide with large scale retirements. But the nation won't have the best it could have if it were utilizing more of the growing 62% of its population that is not white, male and non-Hispanic. By the beginning of the 21st century, just 14 years away, we almost surely will be struggling to maintain a competitive edge in science and technology, and a wider talent base is required to provide an adequate supply of scientists and engineers.

The educational pipeline begins even before first grade, and people move along its length with considerable speed. Today's 7th graders are the baccalaureate class of 1995. Those 1980 babies we looked at earlier are the Ph.D. class of 2010. What we do today at the local, state, federal and institutional levels will determine whether that Ph.D. class portrait more clearly reflects the talent pool of the nation than does the class portrait of 1985. Right now, the educational pipeline is leaking talent throughout its length.

Sarita E. Brown

Minority Graduate Education: Models and Successes

I came to the Graduate School at the University of Texas at Austin in the fall of 1978. My charge was to create a minority graduate recruitment program. Retention had not yet been recognized as an issue and it was only several years later than it was added to the program. When I began there was no program budget, but we did have $50,000 in fellowships. I came to the University at a time when the institution was still grappling with the aftereffects of court-ordered integration.

In the fall of 1978 the total minority graduate enrollment was 431. At the University of Texas at Austin minority enrollment means black, Hispanic, and

Native American. The first-time minority graduate student enrollment for fall 1978 was 72. One year after the development of the program, the total minority graduate student enrollment had reached 465 and the first-time minority graduate student enrollment increased to 83. After eight years of the existence of the Graduate Opportunity Program, the total minority graduate student enrollment reached 560, with the first-time minority graduate student enrollment reaching 109. During this time the program received 21 G*POPS (now Patricia Roberts Harris Fellowships), and the University of Texas at Austin became one of the ten institutions participating in the national Dorothy Danforth Compton Fellowship Program. The $50,000 allocation for minority graduate fellowships was increased to $300,000 of institutional money per year. This amount has been increased again despite the current economic dilemma facing the state.

Why do I share this information with you? To demonstrate that I have learned the Texas art form known as bragging? No, I cite it to demonstrate to you the possibilities that exist for developing successful minority recruitment and retention programs. I would like to claim full credit for the development of this program, but modesty dictates that I acknowledge several supporting factors. First, I had the good fortune to come to the University one year before Peter T. Flawn became its president. Dr. Flawn was the first president of the University of Texas at Austin to put minority recruitment on the University's agenda. Second, I have had the continued support of the Graduate School administration, first under Irwin C. Lieb and then, for the last seven years, under William S. Livingston. Then, too, the state of Texas was one of seven states found in noncompliance with Title IV. This finding resulted in a comprehensive state-wide plan to eliminate the vestiges of segregation, and thus made possible the creation of a fund to provide a budget for the Graduate Opportunity Program.

During these past eight years I have benefitted from the support and advice of what I consider a truly amazing group of devoted and gifted scholars and administrators. It has been my privilege to serve with several such people on the Council of Graduate Schools' Task Force on Minorities in Graduate Education. Among the ten proposals presented to and adopted by the CGS Board was a suggestion for the publication of a guide to successful minority graduate identification, recruitment, retention, graduation, and, placement strategies. I would like to share with you some of the successful models in each of these areas.

The outline for the proposed guidebook provides the framework for my presentation today. Our guidebook begins with a discussion of affirmative action in higher education and an exploration of its necessity as the foundation of all furher action. Then the idea of target populations and the concept of underrepresentation are explored. From there we move to a discussion of the demographic imperatives. As Betty Vetter has so eloquently shown, enrollment composition of undergraduate and graduate schools in the future requires recognition of the growing representation of minority individuals. The introduction concludes with a discussion of the role of the program staff in relation to the external minority community and the staff's function within the University. The

proposed guidebook then takes up four broad areas that the program staff must address.

1. **Identification.** There are many different kinds of models, among them early identification—that is, identifying students very early in their undergraduate careers. One early identification model is MARC for students in science. Participating students have an opportunity to attend summer workshops and engage in activities throughout the school year. They are provided with an opportunity to get some hands-on experience with research and a chance to decide if a future career in science is of interest. Another program is the Sloan Foundation Summer Program in Public Affairs. The Sloan program involves approximately seventeen public affairs programs across the country. Students visit these campuses for a six-week basic skills session and they earn college credit for courses in statistics, economics and English. They have an opportunity to explore the public affairs curriculum and make a decision during their senior year at their home institution about the possibility of graduate education in public affairs. Finally, there are many individual institutional initiatives. Institutions which have such programs include Stanford, Cornell, UCLA, and U.C. Santa Cruz.

Other ways of identification involve name exchanges. In addition to the Minority Graduate Student Locator Service, conducted by the Educational Testing Service and made available when a student registers for the GRE, are the consortium of the Western and National name exchanges. All of them operate basically in the same way. Students, at no cost to themselves, have an opportunity to answer a series of questions about their potential field of study, their undergraduate grade point average, their geographical area of interest, their ethnicity, and their outside activities. This information is made available to the participating institutions and serves as a first step in putting the students in touch with admissions and financial aid staff and allows the recruiting institutions to identify promising students.

2. **Recruitment.** One model that most institutions participate in is Graduate School days. The California schools have devised a very comprehensive series of days. The responsibility for advertising these events is handled by the host institution and the representatives visit for the one day to talk with students about what their institutions have to offer. There are also the GRE forums. These differ from the institutional events in that they are usually organized outside of an academic setting, normally at a hotel and are publicized through the use of media in the city. A final example is something that I call the old Ivy League-FIPSE proposal. This event involves representatives from a group of institutions acting as a team. They visit a campus and spend part of the day talking with students about the application process, including topics such as: how to compose a personal statement, who to approach about writing letters of recommendation, how to select the institutions to apply to, and the mechanics of financial aid. The recruiters discuss the topics in general terms, not directing their information toward any one institution. The representatives save discussion of the specifics of the particular institutions for an afternoon session.

BEST COPY AVAILABLE

Other recruitment models are grouped under something we call cooperative programs. The Committee for Institutional Cooperation model is probably one of the best. This model includes a group of institutions working together to identify students and offer recruitment activities for the students on all the campuses. Another cooperative model is the sister schools concept. One such relationship exists between Brown University and Tougaloo College. The University of Michigan is another example of an institution which has cultivated this kind of relationship with an historically black school. More often than not, these relationships are forged between predominantly white research institutions and smaller historically black schools.

Another area of recruitment is the recruitment publication. We all have them and spend a great deal of time writing them, but do they really provide the necessary information? In the proposed CGS guidebook we seek to identify what we believe is the key information for applicants: a description of the admissions procedures, the availability of financial aid, a description of the minority presence on campus, and an indication of the institutional support for minority graduate affairs. Distribution of recruitment material also needs careful thought. While I am always pleased to learn what my colleagues are doing, I cannot help but think that graduate deans send recruitment brochures to each other because they are not really sure how to get them into the hands of the students who need them. In the proposed guidebook we provide information about student affairs divisions, registered minority student groups, and how this information can help you decipher the directory of a given academic institution. This information can help you route the brochures to a more appropriate audience.

Networks, a much-used term these days, can be another important part of recruitment. At the University of Texas at Austin we created our own. We found that our faculty had very little association with faculty who teach at predominantly minority schools. Our networking program is called the Faculty Affiliates Program. It seeks to put the faculty who serve on the admissions committee in our graduate departments in touch with the faculty at undergraduate institutions who write the letters of recommendation for our minority graduate applicants. Alumni are often a part of networks. This is a somewhat difficult area for graduate school deans, since most people feel a primary affinity for and choose to join alumni associations of their undergraduate institution. In light of this fact, a graduate alumni organization would undoubtedly take shape in a different way from an undergraduate alumni association. This is an area that we believe merits further development. Finally in considering networks, attention should be given to national minority organizations such as LULAC and the NAACP. Such organizations usually have an educational division whose purpose is very similar to the minority recruitment efforts of individual campuses. Institutions should develop better relationships with these organizations, and thus in this way work together for common goals.

3. **Retention.** There are many kinds of models but among the most successful have been mentor programs. The U.C. Irvine model is one which is very thor-

oughly developed and has been funded by a FIPSE grant over the past few years. Regardless of the institution and the specific model, at its core a mentor program is a personal commitment by a faculty member to the development and graduation of a minority graduate student. It involves a personal dedication and works best on an individual basis. It is a guarantee by the faculty member to the student to provide support in helping that student become a member of the higher education community.

Environment of support is another important part of retention. The term itself comes from the Dorothy Danforth Compton model and describes the kind of institutional environment that we feel is important for the success of minority graduate students. There are many different kinds of activities that can make the environment supportive, but for the most part they are things that help a student feel he is a member of the department and a full participant in the institution. They may include discussions about academic benchmarks, how a student prepares for comprehensive exams, how he moves from assembling a dissertation committee to preparing the dissertation proposal, to the defense, how a student is able to develop a rapport with faculty members, how to co-author articles, how to decide which conferences and workshops to attend, and eventually how to seek employment. The Danforth Compton model facilitates this kind of discourse by providing an opportunity for students to participate in regional workshops and then every two years in a national conference.

Another important aspect of retention is financial aid. We chose to place financial aid under "Retention" rather than "Recruitment," because it is financial aid which provides the means for students to stay and finish their degree. Many different kinds of institutional fellowships exist. In the proposed guidebook we describe the structure of these fellowships, funding levels, and the ways in which they are awarded. Another area is external fellowships. In considering them, we discuss how an institution can write proposals and gather information and funds from outside sources, e.g. G*POPs and how the institution can help individual students identify the sources, apply and become recipients of externally funded fellowships. One must consider, too, departmental support primarily in the form of teaching and research assistantships. This kind of support addresses retention, not merely because it provides funds for students to stay in school but also because it gives most students an opportunity to achieve departmental citizenship.

4. **Placement.** Our proposed guidebook begins this section with postdoctoral fellowships. There are two primary uses for postdoctorals. The first is to provide time for research and publishing. This is primarily the case with students in science. The second is the use of postdoctoral fellowships by institutions to bring promising minority scholars to their campus, to further develop their research skills, and provide departments an opportunity to consider young scholars as potential faculty recruits. The University of California system, the University of North Carolina at Chapel Hill and the University of Kansas are institutions that use postdoctoral fellowships for faculty recruitment. Another placement model

that has begun to increase across the country is the use of vitae banks. A third placement strategy described in the proposed guidebook addresses the career path for Ph.D. recipients who choose not to pursue academic careers. The staff at Stanford's placement office have developed a program to help these people seek alternative careers. The CGS Task Force felt it important to discuss also career paths for master's students, since in some disciplines the master's degree is the terminal degree. Other students find that after achieving a master's degree they have received sufficient education to embark upon careers. A final placement model described is institutional faculty hiring. For many of us a primary goal of our recruiting efforts is to increase the number of minority faculty at academic institutions across the country. Hence we feel the need to become involved in the institutional faculty recruitment strategy. We also want to find ways in which the graduate division can help the academic affairs division on our campuses identify and recruit more minority faculty.

This brief list of ideas is offered as a starting point for institutions wishing to develop minority graduate recruitment programs. I hope most of this information is not new and that you have programs like this in your state and on your own campus. For those of you who would like to pursue this information further there are a great many individuals to whom you can turn. Many of the people who participated in yesterday's G*POP workshop are experts who can provide you with information not only about how to develop such programs, but how to fund them and also how to evaluate them. They are very generous people with their time, their energy and their ideas. I encourage you to approach them and ask for their advice.

But in providing you with this list of identification, recruitment, retention, and placement models I would be remiss if I did not acknowledge that the frustration level among my colleagues is very high. The flood gates did not open, the problems did not get fixed, and on many campuses we are looking at minority enrollments that have fallen to the numbers of the late '60s and early '70s, before graduate affirmative action even began. We are not only worried; we are scared. Things are not getting better; in fact, on many campuses they appear to be getting worse.

With great dismay I must tell you that I have been witness to numerous discussions that seem to suggest that there are individuals in our higher education community who truly believe that there are only ten qualified minority candidates produced in this country every year. Common sense and my knowledge of people tell me that this is an impossible conclusion. But I do understand the frustration of the people who engage in this discussion. I have been warned about sharing this kind of information with you. Some of my colleagues have suggested that there are people who would use this observation as a license not to try. They would say to themselves, "My goodness, if these people who have been at it for the last past ten years are becoming disheartened, how can you possibly expect someone like me, or an institution like ours, to embark upon a

minority recruitment program?" This would not be an appropriate conclusion. If anything, clearly now is not the time for us to abandon successful models. We must bolster those efforts and in the absence of new ideas continue to refine the models that we know work.

But what is the answer? I don't know, but I have some hunches. I do not want to engage in a debate with anyone about academic standards, but when three out of five minority children leave the academic system before graduating it is clear that this is a problem that affects those of us on the graduate level. Please don't misunderstand me. I am not suggesting that those of us on the graduate level should sit on our hands and say it is an elementary school problem or a junior high school or a high school problem. I am saying that if we are losing three-fifths of our potential minority applicant pool before they graduate from high school it becomes our problem. We must turn our attention to what is going on at the primary and secondary level of education to insure that greater numbers reach the point where our efforts to recruit them will have an effect.

When I look for inspiration and ideas, I remember sitting at home on a Sunday evening, and watching, as is my custom, *60 Minutes*. I watched a New York City entrepreneur, Eugene Lang, talk about an invitation he received to address the sixth grade graduating class from a Harlem elementary school he had attended in his youth. As he talked with the interviewer about his preparation for his address, he wondered what could he possibly say that would be of interest to these students. He thought I will share with them that which I think is most important, that which I value most about my own experience, and my faith in this country, and that means education. He described how in the midst of his speech he came upon an idea and that was to make available to these students the opportunity to attain a college education. He challenged the students to stay in school and guaranteed to them that if they graduated from high school, he would insure the possibility of their attending an undergraduate institution. He backed up his promise with tutoring sessions, and test preparation workshops, and counseling throughout the school year. He met with these sixty-one students personally to share with them his faith in their ability to make the system work for them. This was exciting, but more exciting still is the fact that today fifty-one of the sixty-one students are still in school. They have beaten the odds.

Several months ago, returning from a recruitment trip, I was leafing through a copy of *Newsweek* magazine, and came across an article which told me that Mr. Lang had taken his idea on the road. He has named the program "I Have A Dream" and has begun an operation in Miami and Dallas.

Returning to my office, I decided to pursue this. Beginning with the Mayor's office for the city of Dallas, I talked with many individuals who finally led me to a gentleman named Bill Farrell. And lo and behold, I found the same thing I had found when I was listening to Mr. Lang. Although he has a Texas twang, he is saying the same kinds of things, with the same degree of care, and the same hope. And that is that education is the best springboard for the promising future

of today's youth. It bothers him that minority children do not believe that the system is theirs. He sees it as his responsibility to provide the means for these students to attain their dreams and hopes.

I cannot believe that the collective imagination and wisdom of this body will do any less. It is up to us to develop solutions for the future. We cannot fail. The stakes are too high.

George Koster

Minority Recruitment in Physics at M.I.T.

I would like to talk about minority doctoral candidates in the Physics Department at the Massachusetts Institute of Technology. At the start, I should tell you a little about the department to put my later remarks in context.

It is a large department, producing about five percent of the Ph.D. physicists in the U.S. As far as admissions are concerned, we make all of the decisions within the department, the applications coming directly to us. Of our students 80% are supported by research or teaching assistantships. In many ways we act like a small university, handling admissions and distributing financial aid as we choose.

We have in the Physics Department at M.I.T. a successful program for minority participation in our Ph.D. and master's degree curricula. It is, by now, a stable program producing, over the years, about ten percent of the minority Ph.D.s in the U.S. I'll describe how it got started and say a little about the nature of the program.

It was started in the late sixties when Prof. Weisskopf was chairman of the department. The initial idea was to attract students from predominantly black colleges who would not normally think of applying to M.I.T. They were to come to M.I.T. with the initial goal of obtaining a master's degree, while filling in what gaps there may have been in their backgrounds. After this, they would, if promising, proceed toward the doctorate. Funding for this was obtained from the Provost, Dr. Gray, who has since become president of our school. Initially, this involved sufficient funds to support three students through the master's degree. After that, those proceeding to the Ph.D. would be funded through research and teaching assistantships. We recruited students for this program by writing and sending representatives to these colleges. All of the students who came were given general academic guidance by a single faculty member. In addition, each was guided individually at the start by a different faculty member who often turned out to be the student's research supervisor.

Two aspects of the program were important. The first was that we set as the immediate goal of the student the taking of a master's degree. Since we were attracting students who very often did not have the backgrounds we had come to expect, this enabled them to take the necessary courses without taking the

doctoral examinations inherent in any Ph.D. programs. It had the added advantage of having students, who didn't go on for the Ph.D., take with them the master's degree. The second aspect was to supply the students with as much individual guidance as possible. This was the reason for having an academic advisor with a limited number of students and an individual advisor along the lines of their research interests.

The program was, I think, successful from the start. It was indeed difficult to judge the students' backgrounds which were different from the usual undergraduate background we had come to expect. The individual attention we gave tended to iron out weaknesses which might have existed. Alumni of this effort now include professors, research workers in prestigious laboratories such as Bell, as well as the astronaut, Ron McNair, killed so recently in the Challenger disaster.

This program, as originally set up, is still in operation at this time. What has changed is that we now attract students from a number of other sources. There is now a greater pool of minority undergraduates coming from the schools from which we have attracted non-minorities in the past. We have also made use of the NSF minority locator service. This lists minority students who are interested in attending graduate school in a variety of fields in science and engineering. We have written to appropriate students listed, encouraging their application to our graduate program. By now, an additional factor is the alumni of this program. Many have maintained the close ties with one another they developed at M.I.T., and help in guiding students to M.I.T. who they believe will benefit from our doctoral program.

I believe there are four elements necessary for our success in graduating minority doctoral candidates. The first is aggressive recruitment. This involves making it known that applications are welcome from students with diverse backgrounds and from schools not reknowned for the strength of their undergraduate programs in physics. It also involves linking with all other programs, locally and nationally, that help to place minority undergraduates. The second is money. Sometimes the students recruited are not initially at the level where research or teaching assistantships are appropriate. It's important to have funds available to support students in a flexible manner. We obtained funding initially from the administration of M.I.T. Now we have added funds coming from the Graduate Dean's office and from the G.P.O.P. fellowships which you know about. These funds are essential to allow some students to fill in their backgrounds. The third is guidance. Again, this is most important for students whose backgrounds don't quite mesh. A unique faculty advisor for minority students is useful. Of more use, is a single advisor involved with the student in a research environment. In this environment the student can mix in a natural way with other students, postdocs, and other faculty, all with a common interest. The fourth, of course, is a faculty committed to the success of the program.

PLENARY SESSIONS

MINORITIES: SUCCESSES AND PROSPECTS FOR THE FUTURE

TECHNOLOGY AND SCHOLARLY COMMUNICATION

REPORT FROM WASHINGTON

THE GRADUATE DEAN IN UNIVERSITY ADMINISTRATION: CHANGING ROLES AND RESPONSIBILIIES

GRADUATE STUDENT FINANCIAL AID

PLENARY SESSION V

Thursday, December 4, 1986

TECHNOLOGY AND SCHOLARLY COMMUNICATION

Presiding: David S. Sparks, *Vice President for Graduate Studies and Research, University of Maryland*
Speakers: Herbert C. Morton, *Director, American Council of Learned Societies, Office of Scholarly Communication*
Patricia Battin, *Vice President and University Librarian, Columbia University*
Adam Hodgkin, *Director of Electronic Publishing, Oxford University Press*

David S. Sparks

This program is an outgrowth of the work of the CGS Task Force on Technology and Scholarly Communication. Members of that Task Force include: Roger Clark, James Clayton, Philip Manire, Linda Mantel, Herbert Morton, Allen Sanderson, Anita Werling, and myself.

No one in this room needs to be told that the impact of technology on scholars has been profound and promises to be still more significant in the years to come. We have already begun to experience the consequences of our capacity to retrieve data instantly from more than 3,000 public data bases. We can produce, store, retrieve, and massage data in forms and quantities that boggle the mind. On Monday of this week an interesting historical parallel was brought to my attention by the curator of the Humanities Resources Center at the University of Texas, Austin, Decherd Turner. In the course of showing us original copies of the Guttenberg Bible and of the first book printed in the English language, Professor Turner reminded us that the sixteenth, seventeenth, and even the eighteenth centuries were preoccupied with the technology of printing and its product, the *book*. Only slowly did we return to our focus on the *word*, the contents of the *book*. In a similar fashion we, during the last three decades, have been preoccupied with the *form* of modern scholarly communication, i.e., the computer and its accompanying software. It now appears that we are on the verge of making both the machine and the software invisible to the user and bringing the scholar face to face with the information it contains just as he or she now focuses on the contents of the book, rather than on its form. A technology that is invisible is providing scholars new freedoms from the mechanical processes of acquiring, storing, and retrieving information, thus permitting a renewed concentration on the information itself.

To help us explore the impact of technology on scholarship we have four distinguished presenters.

Herbert C. Morton

What Scholars Think About Scholarly Communication

In the beginning, scholarly communication was simply the act of Scholar A talking to Scholar B, or, more appropriately, Philosopher A talking to Philosopher B, or Wise Man A talking to Wise Man B on a starry night.

But that was long ago, and a couple of millennia make a difference. Today, the process is much more complicated, as you well know. Scholar A still talks to Scholar B, but if he—or she—has something important to say to others who share the same interests, he writes a scholarly article or a book. If he wants to know what his colleagues around the country or the world are doing, he joins professional societies and attends scholarly meetings, and reads the journals. So does she.

Scholars learn, too, that they can't keep up with all that's happening by themselves, so they go to the library for help—for books, for journals, for bibliographies, and for someone who can search the online databases for them. Or they ask their assistants to do the job—which, in computer parlance, might be called downloading.

If they are deeply engaged in certain kinds of research that require manipulating large quantities of data, they go to the computer center for help—or buy their own computer. If they are in a hurry, they will tie into an electronic mail network.

As they find they need more money to do research and communicate their results, they appeal to foundations, government agencies and top administrators on campus for help.

And lo and behold, we no longer have simple *scholarly communication*—Scholar A talking to Scholar B—we have a *system* of scholarly communication involving a large group of players—scholars, publishers, librarians, computer experts, university administrators, learned societies, and foundations. And it becomes readily apparent, when you stop to think about it, that what one group does often affects the others—decisions about what books to preserve, journal pricing policies, new technology and copyright and so on. The welfare of these groups is inextricably bound together. That was a central theme of the National Enquiry into Scholarly Communication in the late 1970s, and is the underlying theme for the work of our office.

The challenge we all face today is to increase the awareness among all of our constituencies that what matters is not just what is good for librarians or publishers, or the humanities, but what is good for the total enterprise.

In addition to the promotion of mutual understanding—which is the intangible or quiet objective of our office—we have conducted some special projects. Of these, the survey of scholars is our most visible example. A year ago, in November 1985, we mailed a 16-page printed questionnaire to a probability sample of the members of major ACLS societies in seven fields—classics,

English literature, history, linguistics, philosophy, political science and sociology—to take a reading on scholars' attitudes toward a range of issues related to scholarly communication—reading habits, publication experience, library use, and applications of new computer technology.

For this talk, I have singled out four findings that I think may be of particular interest to this audience.

First, we found—though it will hardly surprise you—that the use of computers has spread much more rapidly among humanists and social scientists during the first half of the 1980s than I think was anticipated—and with much less fuss. The percentage of survey respondents who owned a personal computer, or who had one for their exclusive use, rose from about 2 percent in 1980 to nearly 50 percent in 1985. Over 90 percent of our respondents said they had access to a computer.

More significant, however, is the fact that the computer took its place among the humanists and social scientists with scarcely any reverberations—in sharp contrast to the predictions that great dislocations and perversion of academic traditions would ensue if the campus were to become a computerized culture. Among computer users there's very little concern about this question. Only about 4 percent of users think that the computer will have a negative effect on their discipline in the long run. Most of the others—nearly three out of four—think the effect will be positive. The rest are neutral or don't know. Even among those who don't use computers, only 8 percent think the long run effects will be negative, compared to 40 percent who think it will be positive. Among nonusers the biggest group—nearly half—remains uncertain.

What few scholars appreciated five or ten years ago was how rapidly the computer could be designed down to a human scale—to fit on a desk top or a lap—that it could manipulate words and produce manuscripts as well as it could crunch numbers—and that it would establish a beachhead by carrying out with remarkable efficiency and convenience a variety of very familiar tasks. But already, as our survey shows, a substantial number of scholars have moved beyond word processing to a variety of research tasks—statistical analyses, compilation of bibliographies, graphical displays and so on. We still don't know, of course, whether this rapid and widespread acceptance and enthusiasm is transitory—whether the immediate satisfactions of computer power have diverted attention from the long range issues. All we can say for sure now is that the focus of discussion has shifted away from whether computers belong in higher education to questions about their effect on scholarly productivity, teaching effectiveness, library efficiency, collegiality on campus, and so on. Phase I has been a success, but what about Phase II? In the long run, for what kinds of uses will the computer prove to be cost effective? That we can only guess at. Unanswered questions abound over how funds for hardware, software and services will be allocated among departments—or between books and journals on the one hand, and computers and online services on the other. We still don't know how the choice of research topics in the humanities and social sciences will be affected.

And so on. On some campuses commercial donors have been virtually allowed to decide what equipment should be acquired, while administrators have ducked questions about the consequences. We have all read predictions that obsession with computers will lead to isolation among scholars and a loss of collegiality on campus, but the opposite could be true. Herbert Simon observed in November at an EDUCOM conference that there is a greater sense of collegiality and freer personal exchange among computer buffs than among any other group on campus. On many issues evidence is largely still conjectural and anecdotal. It will be a few years at least before we are able to say whether we are indeed making a Great Leap Forward or merely entertaining a Grand Illusion.

Second, the warning signals are flying on peer review—in the humanities and social sciences as well as the sciences where failure to detect fraud and problems of multiple authorship have exacerbated long-standing concerns about fairness. We were surprised to find that about two-thirds of the respondents to our survey think that journal peer review is biased in favor of established scholars, scholars at prestigious universities, or scholars engaged in currently popular fields of research—and half of the respondents said that the bias is worrisome enough to warrant reform.

That most scholars *think* that journal peer review is biased does not prove that it is. The perception of those scholars may be faulty, not the system. But if this is a misperception—and it persists—the consequences could be as damaging as proof of unfairness. Given the decisive role peer review plays in the lives of scholars, its credibility is essential. Thus if the system is working, it must be shown to be working, because in the absence of information doubts persist and cynicism will develop. On the other hand if it is failing in some respect, that failure must be brought into the open and dealt with. Letting the system drift is an invitation to cynicism.

In an article in the *New England Journal of Medicine* in February 1984 John Bailar and Kay Patterson noted the lack of solid data on how peer review is working and commented on the paradox that "the arbiters of rigor, quality and innovation do not apply to their own work the standards they apply to the work of others". They called for a broad nationwide systematic investigation of the issue—and last month we got some evidence that the call has been heard. The *Journal of the American Medical Association* announced that it would sponsor a broadly representative congress on the issue in three years—the intervening period being used to conduct a series of rigorous investigations into how peer review is working in the biomedical sciences, and perhaps other sciences as well. Is this a step that the humanists and social scientists should take as well?

Technology, of course, has injected a new element into the peer review process—the reviewing of articles appearing in electronic form and their acceptance as evidence of promotion and tenure decisions.

Third, we catch a glimpse of the library's reflection in the findings, and it is a rather flattering one. Scholars like libraries. They think they get very good service when they ask for help of any kind. Interlibrary loans are efficiently

handled. Scholars have apparently even reconciled themselves to the older and initially unpopular technology, microfiche, for certain uses and they are reasonably satisfied with access and readability of fiche though they are generally dissatisfied with the quality of the copies that are being printed from fiche.

As for the newer technologies—online data bases and computerized library catalogs—as of a year ago their effect was not yet being felt strongly. About 38 percent of the respondents report having used computerized data base searches—though 76 percent report that the service is available. Two thirds of the users describe their results as mildly or very satisfactory. We don't have data on why the others weren't satisfied. (Librarians performed three out of four of these searches, incidentally, with the scholar present half the time.)

Less than half of the respondents report that their library catalog has been partly or fully computerized. (At research universities the figure is 63 percent.) About two thirds of those who have access have used the catalog. The impact appears still to be modest. Less than 40 percent of the users say that the computerized version has increased their access; the same proportion thinks it is more enjoyable to use. About one in five report that their productivity as a teacher or researcher has been enhanced.

It's also worth reporting that a substantial fraction of scholars don't know whether the library catalog has been computerized, whether online searching is available, and whether instruction in the library services is being provided to incoming freshmen and established scholars.

Scholars report that their library collections are meeting their teaching needs well enough, their research needs less well—with substantial differences between scholars at research universities and the others. It is in meeting these research needs more effectively that the new technologies and resource sharing can eventually make a great improvement.

Fourth, I would like to say something about the survey overall. These issues that I have been discussing—new technology, peer review, the role of the library, and the others touched on in the survey—are of enormous importance to your faculties, not just mild concerns.

How else can we explain the fact that more than 70 percent of those who received questionnaires filled them out—even though doing so took them a half hour to 45 minutes to complete. Would they have done so if they had not been interested in the issues, or if they did not think the results would be worth knowing? Some 750 of the respondents—nearly one out of five—also took the time to fill out a page provided for them to write additional comments.

It seems reasonable to infer that there is a great thirst for more information about the issues treated under the heading of scholarly communication and they should be discussed not just in professional meetings of publishers, scholars, librarians and administrators but also in the campus setting where representatives of all groups can meet. One of the activities in our charter was to conduct conferences on university campuses bringing together the relevant constituencies to share their views on issues of mutual concern. During the past year we held two

pilot conferences, which met with enthusiastic response. We think that such meetings ought to take place on many more campuses—for it is on the campus that so many of these issues come to a head and where key decisions must be made during this era of rapid technological change.

Patricia Battin

The Electronic Scholar

According to an expert observer of the technology scene:

> "There is no apparent end in sight to the possibilities for information storage, transmission and retrieval being created by new technologies or less expensive applications of older technologies. The watchwords for information technology today are smaller, faster, cheaper and better. At the same time, we are witnessing the blurring of the boundaries among heretofore distinct media forms."[1]

When Dr. Sparks asked me to participate in this session, he proposed that I focus on new technologies for storage and retrieval of information. I responded that I would prefer to talk about the "electronic scholar" because that integrated concept, I think, is essential to our understanding of the impact of technology on the scholarly process. I think some of our present chaos stems from an imperfect understanding of the process of scholarly communication and imprecision of language in conceptualizing that flawed understanding. For example, there is a great tendency to focus on "library automation" and to separate it from the scholarly process. Or to think of the library merely as a building where we mark and park the knowledge rather than as the central information infrastructure of the print environment. The critical issue which confronts higher education today is the use of technology by our students and scholars and how that use influences the manner in which information services are provided. Storage and retrieval are important functions, but perhaps the greatest impact of technology has been the revolution in the capacity to disseminate knowledge in electronic form or "Compunications" as one wit has called it—the marriage of computer and communication technologies.

If we are to link successfully the promise of the new technologies with the intellectual heritage of the past to provide continuing unfettered access to information, we must look at the organization of the university from the perspective of the wired scholar, the information seeker at the individual workstation. The

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[1] Benjamin M. Compaine, "Fresh perspectives on the information business," in *The Cost of Technology: Information Prosperity and Information Poverty*. Gannet Center for Media Studies, Columbia University, November 1986.

boundaries among the various media formats ARE blurred, and becoming increasingly more so. Of the four major functions of the process of scholarly communication—generation, storage, dissemination, and retrieval—only the generation of knowledge has maintained its historic role—arising from the human mind—and even that role is threatened if we believe the predictions of the gurus of artificial intelligence. With the new technologies, librarians, publishers and scholars can all become publishers, archivers, and disseminators. And the fact that they are doing so has created our current chaos.

I think it is interesting to note that Socrates feared that writing would destroy memory and wisdom by enabling people to compile quantities of lifeless information. As with so many technological advances, it often takes many hundreds of years and succeeding technologies to vindicate the prophet. How could Socrates have known that before our memories were completely destroyed, we would invent the memory chip, which appears to have limitless capacity to compile and store lifeless information?

The fact of the wired scholar who now possesses extraordinary capabilities at his/her workstation for new means of generating, diesseminating, storing, and if he/she is lucky, retrieving information is forcing the development of a new information infrastructure to respond to those needs.

I would like to talk today less about the technologies influencing storage, dissemination and retrieval of knowledge and more about the implications of their use by scholars for those of us responsible for providing information services to the university since I assume that, as deans, you share my concern that we must shape our own future rather than permit the technology to set the course.

Historically, the university has defined the responsibility for providing sources of information to faculty and students as a central function, mainly in the form of libraries. Once resources have been acquired by the university, they have been available as a free good for its members, by virtue of their appointment or their admission as students, and in the case of public institutions, society at large. Costs have been budgeted centrally and users have been charged little or, most commonly, nothing. Subsidized browsing—the capacity for broad access to information sources at no charge to the user—has been the primary characteristic of our educational and research enterprise.

In contrast, funding for computing because of its magnitude and rapid growth has generally been addressed in an ad hoc manner, and because initial uses of computing were not for information processing, cost recovery from the individual became the basic funding strategy. The rapid growth of computer and communications technology for information exchange among scholars has created a chaotic environment and rendered the traditional formulas obsolete.

The capabilities of the new information technologies have had and will continue to have a fundamental and revolutionary impact on the manner in which scholars and students acquire, use, and disseminate information. The capacity to organize and manipulate information in machine-readable format by sophis-

ticated retrieval systems and the use of Boolean logic has stimulated different ways of thinking about and conceptualizing intellectual inquiries. The graphics capability of computers makes possible the creation of three-dimensional models in machine-readable form, which then become important tools for related and continuing research efforts in other laboratories and universities. Optical disks, video disks, and cd-roms (compact disk-read only memory) now permit the storage of gigabytes of information in a very compressed space. Communications technologies coupled with the widespread use of microcomputers now support rapid global transmission of research findings, numeric and quantitative data, and informal collegial communications among individual scholars. As one scientist has observed, "Digitized information has become a way of life."

However, this new way of life has outpaced our efforts to conceptualize, develop, and finance the new infra-structure necessary for the full and productive use of the new technologies which require compatibilities of hardware, software, and network gateways on an international scale to meet the needs of the academic community. In addition to these organizational and policy barriers, the characteristics of information technology, which on the one hand permit an extraordinary expansion of the ability to create, store, and disseminate information, also encourage the chaotic proliferation of information resources and permit unprecedented control of access to that information. The ability to control access—that is, to store it at the source of publication and nowhere else—by charging a fee per use has serious implications for the individual researcher as well as the university's capacity to provide the necessary information services.

During the past few years, librarians have explored with scholars and students some of the changes they anticipate in their work habits and methods. These can be summarized as follows:

1) The creation and use of machine readable data files will increase substantially, expanding scholarly output as such files are copied and analyzed for purposes secondary to those for which they were originally created as they allow the gathering, manipulation, and analysis of data in ways not possible before, and as they allow the verification of original research results by re-analysis of primary material such as field notes, interviews, etc. The implication of this forecast is, of course, the essential need to organize, store, and make universally accessible vast new amounts of machine-readable data.

2) The text editing capabilities will simplify the production of books and articles. The ease of producing scholarly reports may increase their production and radically change our current publishing structures.

3) The development of software may be considered part of the scholar's contribution to his or her field of research and may be disseminated as are other research results.

4) For the foreseeable future, the final results of scholarly research will continue to be published in monographs and traditional refereed journals. There is no indication at present that scholars are prepared to accept electronic formats as a substitute for printed materials. This means that universities, through their

libraries, will need to assume incremental, not substitutional costs, as they make materials available simultaneously in more than one format.

5) It is likely that well within five years, networks of scholars working within the same narrow research areas will establish and maintain files of full text articles, preprints, information networks for communications of research results or ideas, and bibliographic citations and abstracts relevant to their subject interests. Storage capacities, indexing/formating softwares, and standardized compatible network links will be required to support such communication. A good example of this need is the current planning by the National Science Foundation for both a national network for access to supercomputers as well as a scientific research information network. The need is recognized, but the conceptual work remains to be done.

6) Finally, our scholars emphasize the need to integrate all kinds of information on the electronic workstation: internal and external data bases, collegial internal and external communication networks, software, user assistance, consultation services, and the ability to share information easily. In sum, scholars and students want a variety of information and communication resources through one source and they want to be able to use it as easily as possible.

What are the implications of these new technologies for the information providers? What kind of new infra-structure do we need?

1. The book is no longer the sole means of communication from one mind to another. Nor will the computer replace the book. The diversity of scholarship—both among disciplines and within them—will require a mixture of formats and hardware for a very long time. The challenge for the next decade—and perhaps longer—is to provide the necessary linkages between formats. The range of expertise and hardware/software required to use machine readable information efficiently and effectively is now far greater than the simple ability to read. It is for this simple reason that the National Archives have decided to store our national resources, even though produced in machine readable format, on computer-output human readable microfilm. It is also important to question the usefulness of machine-readable storage technology for long term archival purposes. The current life today of hardware is about three years; revised versions of retrieval software seem to occur almost daily. Stored in computer centers around the country are many data files which are no longer accessible.

The latest hope for permanent and economic storage is the c.d. rom. Hardware standards have been set, but there is a hopeless proliferation of access software standards and protocols which make the technology expensive, inconvenient and cumbersome to use. And there is as yet no reliable documentation on the shelf-life of cd-roms, nor is the resolution yet fine enough for illustrations and other graphics.

It is important to emphasize, as strongly as I can, that the hardware is far ahead of the software. In other words, we can store millions of words on magnetic tape, computer disks, and many varieties of laser disks, but we have not yet developed economic means of retrieval. The process of cataloging and in-

dexing is still very much a process of the human mind and thus is slow and expensive.

The card catalog, for example, is probably one of the most ingenious examples of software engineering; to date, the only method we have for converting our millions of bibliographic records into machine readable format is laborious and expensive keyboarding. Optical scanning will convert the data, but as yet no software to format the data so that it can be manipulated for retrieval has been devised.

2. The technological capacities, formerly controlled by the library and the computer center and the publisher have now moved into the hands of the user. Everyone now becomes a publisher, with extraordinary implications for our traditional control of incremental costs to the institution and our systems for access, retrieval, dissemination, and storage.

3. Our bibliographic and computer networks were designed to be mediated through centrally managed service organizations—libraries and computer centers—and their protocols reflect that design. Despite the sophisticated power of computers and telecommunications networks, the frustrations of incompatible hardware, software, and networks plus the lack of standardized protocols for organizing and retrieving information in machine-readable data bases lead most scholars to pick up a phone and call a colleague in their search for information. As one frustrated scientist reported, and I'm sure his complaint is echoed by every student involved in a research project: "Research today is 90% search and 10% research."

4. There is more technology than we can afford. Our choices must be based on clear understandings of the institutional mission, informed recognition of the alternatives, and a thorough knowledge of the consequences of those choices to the quality of instruction and research.

5. The tenure process appears likely to continue to drive scholarly output into greater fragmentation and over-publication which becomes economically impossible to support. The breakdown of the refereeing process has created insupportable costs for libraries. In addition, new text editing capabilities have immensely simplified the production of books and articles and most certainly add to the publication pressure.

6. The increasing privatization of information resources and the direct marketing of knowledge bases to faculty and students threaten our traditional system of providing institutional subsidized information through libraries. We must develop new strategies to insure equity of services among all disciplines and individual members of our constituencies.

The glitter and seductive promises of the new technologies have tended to obscure the realities of service and cost. We are constantly being told that technically, anything is possible; what we aren't told is the cost of developing the software to make the hardware productive and the communication convenient and invisible.

If we are able to make the new technologies effective and productive in higher education, these are some of the issues we must consider and resolve:

1) The development of a new information infrastructure which successfully coordinates and manages ALL the formats. Unfortunately, there is no template which we can impose across the higher education community—each institution, because of its unique history, structure, and mission must develop its own solution. At Columbia, we have chosen to combine the resources of our libraries and academic computing facilities into one organization—the Scholarly Information Center—under the management of the University Librarian. Our objective is to provide one-stop information shopping for our students and scholars; behind the storefront, we will organize the technical and disciplinary talent in the university to meet individual information needs, regardless of the format.

2) Hardware costs will continue to decline, and storage and memory capacities will continue to increase. However, the rapid obsolescence of the hardware, continuing maintenance costs, the chaos of lack of standardization accompanying new developments, and the increased cost of maintaining qualified support staff to maintain the equipment will offset the apparent economies.

3) Software costs will continue to escalate. We are just beginning to recognize the problems involved in retrieving information from very large data bases. There is no problem in storing information; the challenge is retrieving it. Many of you may have read that the Japanese venture into Fifth Generation very high speed computers has been fatally blunted by the failure to develop the software necessary to exploit the hardware capacities. There is a great need for expert systems, replicating the inside of a reference librarian's head, to sit in front of the huge range of information resources now available to the scholar at the workstation.

4) The cost of communications networks to provide invisible and convenient linkages will continue to escalate. Again, the development of complex software to link a wide range of hardware devices will be expensive and lag far behind the hardware capacities. There is a great shortage of telecommunications talent in the country, and higher education will be at a distinct economic disadvantage.

5) The new means of storage and retrieval bring with them a whole new set of copyright issues and licensing concerns. There is not time today to discuss the extremely knotty problems of copyrights and licenses, except to say that we desperately need a sensible formula for protecting intellectual property in the electronic society which will promote rather than stifle the unfettered exchange of knowledge.

6) And finally we must face the challenge of nurturing, and affording, the very special talent we will need to manage the new information enterprise. From my experience, the next decade will be what I call the Hand-Held Generation. It is simply not true that once a certain level of computer literacy is achieved, no more assistance is needed. Every quantum leap in the technology requires a new learning process and expert guidance. Institutions will need to provide ex-

perts in telecommunications, hardware, software, and information sources to support the expanding use by scholars and students.

Given all these challenges, the next decade promises to be an exciting one for higher education. We have an unprecedented opportunity to shape the future. The choices are myriad, and the rate of change seems to escalate daily. But then perhaps it has been ever thus.

Diogenes is reputed to have said, "Bury me on my face, because in a little while everything will be turned upside down."

Adam Hodgkin

Electronic Publication: Its Impact on Scholarship

In this presentation I shall try to do three things. First, I shall try to say something about what we might mean by the term "electronic publishing". Second, I shall sketch some of the ways in which these new, emerging, methods of publication offer exciting possibilities for scholars in all disciplines. Finally, I shall risk some observations on the changing requirements of a scholarly publisher.

The term "electronic publishing" is new. Ten years ago it would have struck most publishers as a barbarism. We knew then that it was our business to publish books and journals printed on paper. Today, electronic publishing is a hot topic for publishers, and most sizeable publishers have formed divisions, task forces, or committees to address the issue. This does not mean that publishers are making money out of electronic publishing. Very few are. It does not even mean that we know precisely what we are talking about. We know that in general terms it has something to do with the pervasive cultural effects of computing. To be even more general we know that it has something to do with the broad coalition of information technologies—microelectronics, telecommunications, PC software, optical storage, video, etc—which feed upon each other to grow with ever-increasing vigor to offer new and unexpected channels and modalities for communication. In short, we expect these technologies to have a profound effect on scholars and scholarly publishers, as they will have a profound effect on all those who work with knowledge.

Electronic publishing seems to be shaping the future for publishers in three different senses. First, we are entering an era in which almost all publications will be produced by electronic or computerized means. This has been a surprisingly rapid change. Twenty-five years ago most books were set by hot metal. Today very few printing factories have metal typesetting equipment. The introduction of low-cost personal computers has thrown the responsibility for initiating the production process right back with the author. Secondly, we are entering an era in which publications which would in the past have been printed on paper and distributed as books or journals can now be reproduced and dis-

tributed as streams of electrons over telephone lines or as patterns on magnetic media. "Electronic publishing" is often taken to mean the electronic *production* of books or the *distribution* of texts which would otherwise be printed on paper. There is nothing wrong with these definitions but they do not go to the heart of what is radical and creative about electronic publishing. Information technology does not simply change our methods; it also changes our objectives.

The creative challenge of electronic publishing is that these new information technologies give authors and publishers opportunities to create new forms of intellectual property, new sorts of text, new sorts of "objective knowledge". There are positive and negative ways of underlining this claim. The negative aspect is that there can be no point in electronic, or computer-based, publishing unless it is different from traditional book publishing. Paper will remain an astonishingly flexible and economical medium. Most plans simply to put books and journals onto magnetic media are doomed to failure. Transferring books to electronic media will be more likely to work if the software supplies additional features which exploit opportunities created by the differences between paper and computer media.

The differences between electronic and traditional publishing are more to do with function than content. What these differences of function might be, can be seen by considering the positive claim. Electronic publishing will be different because the computer system will allow authors and readers to do things which cannot be done in print. The new publications will exploit the computer's ability to present images, moving graphics and text, to search large bodies of information swiftly and accurately. They will exploit the capacity of computer software to be highly interactive and responsive to the interest of a particular user. The development of artificial intelligence techniques will lead to methods of knowledge processing. Some examples may help to give some substance to this vision of what electronic publishing could become.

The largest electronic publishing project to which Oxford University Press is committed is the computerization of the Oxford English Dictionary. The first phase of this project will involve the expenditure of some two hundred man years over six elapsed years in creating a new and integrated edition of the original dictionary and its *Supplements*. The history of this project illustrates the different ways in which we can take the concept of electronic publishing. In 1983, the first steps were taken in the belief that a computerized production method was the only way in which two very large books, in total 60 million words with some 250,000 inter-relationships, could possibly be integrated. The job could not be done by scissors and paste. But once we realized that we were committed to an electronic production method it soon dawned on us that the book could be sold in electronic form. From the start we appreciated that there would be a market through on-line databases. More recently we have begun to realize that we shall not be selling the *book* in electronic form; it would be more accurate to say that we shall be selling a database.

The project began as a straightforward requirement for a production system

which would allow us to produce a new edition of a very large, complex book. This book is still very important to us but it is becoming clear that in some ways the database which is inherent in the book is more important and more valuable. Printed dictionaries are databases of a rather simple hierarchical kind. They have alphabetically ordered entries and within each entry there is a certain structure. What we did not realize when we embarked on the computerization was how rich, consistent and valuable this structure is.

The potential, and in some sense the necessity, for computerized books is strongest in the case of those very large reference books or tools of scholarship which threaten to become unwieldy in book form. These books are in many cases only accidentally printed as linear texts. The need to computerize major library catalogues, such as the British Library's Eighteenth Century Short Title Catalogue, is a consequence of the fact that it will be possible to maintain an adequate control of bibliographic information only through computerized systems. The stock of published material is growing at a rate which defeats traditional cataloguing methods. In an analogous predicament, we realized that it would not be possible to produce a printed supplement to a supplement, and the only way in which it would be practical to continue the lexicography of the *Oxford English Dictionary* and its *Supplements* would be by integrating the two works. The only feasible way to do this was by computerizing the whole corpus. The production of the Eighteenth Century Short Title Catalogue and the *New Oxford English Dictionary* was not directly undertaken for reasons of scholarship, but there can be little doubt that major by-products of these computerization projects will be databases of great value for researchers in historical, linguistic and other disciplines.

The creation of these databases is not significant in its addition to the stock of human knowledge, but in the way it makes this knowledge accessible. It is not as though we had discovered a trunk of Napolean's archives and thereby acquired new knowledge. It is rather that what is already known is more accessible, because information held in computer memory is more usable than information held in book form. The data which these databases contain is very similar to that which appears in the printed or typed records from which they are descended. The computerization of these large books will be significant to scholars primarily because it will make it possible to get immediate answers to such questions as: according to the OED, which words with a medical definition entered the English language from Dutch in the seventeenth century; or, how many pamphlets on medical matters were printed in the English language by Dutch printers in the seventeenth century? The answers to these questions are simple statistics, but a listing of these words, or of these works, might be extremely suggestive and useful to certain sorts of historical inquiry. So much information is implicit in our printed records but in practice much of it is quite inaccessible. In one sense it seems to me that the objectives of these major database projects are rather humble. They aim to be faithful descendants of existing reference works, but the modesty of this aim should not hide the fact that in putting these

works into computer databases we have new models for the arrangement of information and thus for the generation and expression of knowledge.

A major database, such as a large catalogue or a multi-volume dictionary or encyclopedia may seem to be rather remote from the concerns of many authors. The very scale of these large publications may seem inappropriate for the work of many scholars. Can one envisage smaller scale computer publications which might fall within the ambition of one, two, or a small group of scholars or scientists? There are many such examples: consider the research groups which are major computer users on your campus; there are many possible computer-based publications: a graphic atlas of the ecology of a county, a routine for the analysis of music, electronic editions of the works of great authors, databases of molecular structures, an expert system which models a welfare benefit system, etc.

The remarkably rich possibilities for computer-based publishing in scholarly disciplines depends for its realization on authors—scholars and scientists who can invest the wit and time in developing new modes of publication: literary works which rely on the non-serial arrangement of computer memory, or software which has bookish qualities. But scholarly publishers and university presses may play a key role in the next decade or so when traditional methods of publication and knowledge retrieval will be under increasing economic pressure and subject to close scrutiny in the university sector. If scholarly publishers are not willing to innovate and if scholars and scientists have to look elsewhere for help in publishing research which does not entirely suit the book mode of publication, we can expect to see the growth of independent scholarly software houses. In any event the market for software will become more fragmented and differentiated. To some extent this is already happening.

University presses were invented as a means of guaranteeing an adequate supply of printed texts for scholarly or religious teaching. Their role was inward-looking—to supply the parent university with teaching materials. The production of textbooks has long ceased to be the primary function of the university press, and most textbook publishing is now performed by profitable private companies. The role of the university press is now much more outward-looking. University presses are expected to publish books of scholarship which will "last" or which will "travel". It is as though the university press is now a means by which the university sector presents the best possible record of its activities, its knowledge and its values, for posterity and the world at large. The matter is not often viewed in this light but the university presses and other scholarly publishers are important agents for knowledge transfer. The challenge for scholarly publishers will be to ensure that new methods for the representation of knowledge and the publication of research are suitable and fitting for the sciences and humanities. The growing power and richness of information technology will call for discretion as well as imagination, but it will certainly call for imagination.

LUNCHEON

Thursday, December 4, 1986

PRESENTATION OF AWARDS

Presiding: Lee B. Jones, *Dean of the Graduate College, Executive Vice President and Provost, University of Nebraska* .

GUSTAVE O. ARLT AWARD IN THE HUMANITIES

Presented by: Gillian Lindt, *Dean, Graduate School of Arts and Sciences, Columbia University*

Dr. Olga Soffer-Bobyshev (r.) holding award presented to her by Dr. Gillian Lindt, Chair of the Arlt Award Committee.

The Gustave O. Arlt Award in the Humanities is named in honor of the late Dr. Gustave O. Arlt, a distinguished humanist, scholar and administrator, and founding president of the Council of Graduate Schools. The award honors a young American Scholar who has made a significant contribution to a designated field in humanities studies, who has received the doctorate and published a significant book within five years of the date of the award. This year the specified field was Archeology. The Arlt Award was presented to Olga Soffer-Bobyshev,

Assistant Professor of Anthropology at the University of Illinois, Urbana-Champaign. Dr. Soffer-Bobyshev received the award for her book, *The Upper Paleolithic of the Central Russian Plain.*

Her book was commended for its completeness and "extraordinarily comprehensive treatment of all aspects of the chosen place and time." She was praised for her knowledge of the scholarship in her field and for her "correlation of geological, biological, and archaeological data to reconstruct the cultural history of the Dnepr Basin over a very long period of time in prehistory."

A certificate and honorarium of $1,000 were presented to Dr. Soffer-Bobyshev by Gillian Lindt, Chairman of the CGS Gustave O. Arlt Award in the Humanities Committee.

CGS/UNIVERSITY MICROFILMS INTERNATIONAL DISTINGUISHED DISSERTATION AWARD

Presented by: Richard Attiyeh, *Dean of Graduate Studies and Research, University of California, San Diego*

CCS/ University Microfilms Distinguished Dissertation Award winner James Holston (l.) receives his award from Dr. Richard Attiyeh, Chair of the CGS/ UMI Award Committee.

The CGS/UMI Distinguished Dissertation Award, established by the Council of Graduate Schools, with funding by University Microfilms International, rec-

ognizes excellence in doctoral research. Broad disciplinary areas are designated each year, with the Social Sciences as the field for 1986.

The sixth annual award was presented to James Holston, Assistant Professor of Anthropology at the University of Southern California, for his dissertation entitled *The Modernist City: Architecture, Politics, and Society in Brasilia*. His dissertation is the product of many years of research and scholarly pursuit. Dr. Holston lived in Brasilia for two years of extensive field research. He received his Ph.D. in Anthropology from Yale University where for his outstanding work he was awarded the John Addison Porter Prize—the Yale Dissertation Award for Scholarship.

Dr. Holston will return to Brasilia for 1987–88 as a Fulbright Research Fellow in the Scholar Abroad Program.

CONCURRENT SESSIONS

5. INTERNATIONAL EDUCATIONAL EXCHANGE: THE AMERICAN SCHOLAR ABROAD

Presiding: William H. Macmillan, *Dean of the Graduate School,* University of Alabama

Speakers: David M. Lampton, *Professor of Political Science, Ohio State University*

C. W. Minkel, *Vice Provost and Dean of the Graduate School, University of Tennessee at Knoxville*

William H. Macmillan

In recent years, at the annual meetings of the Council of Graduate Schools, much emphasis has been placed upon the international student on the United States campuses. This year, as we are celebrating the fortieth year of the Fulbright Program, it seemed appropriate that we look at international education exchange in the other direction—faculty and graduate students from our universities studying in other countries.

Recently Senator Fulbright commenting on his views of the aims of his program, indicated that his goals were to broaden the United States citizens' perspectives of peoples and cultures different from our own; that to live and study in a different culture will enable them to return to the United States with a better understanding of world affairs, and thereby to enrich our own culture. Conversely, it offers citizens from other nations the opportunity to study in the United States and to learn, first hand, of our culture.

Since the inception of the Fulbright Program in 1946, more than 155,000 awards have been made, of which approximately 50,000 have gone to U.S. citizens. For the most recent year for which figures are available, 1983–1984, of the 1,493 awards made, one-third went to graduate students and one-fifth went to research scholars; the total from these two groups was 690, and this is only a part of the total of U.S. citizens who ventured overseas for study purposes.

When we go to study, or undertake research projects, in the more developed countries, we often find that while there are differences in the way things are done, there are also many similarities. In the less developed world we run into more educational exchanges in two very different parts of the world: Latin America and the People's Republic of China, and we are fortunate to have experts from both of these areas with us who will present interesting perspectives and insights.

Dr. David M. Lampton, from Ohio State University, has had extended research experience and travelled broadly in the People's Republic of China. Dean

C. W. Minkel, from the University of Tennessee, has taught and conducted research in Central and South America over a period of twenty-five years.

David M. Lampton

International Educational Exchange: The Case of China

Today I shall address three issues: 1) Why have Americans found it in their interest to become extensively involved in educational exchanges with the People's Republic of China since 1979? 2) What are some of the quantitative dimensions of our educational exchange relationship with China? 3) What policy issues confront graduate school leaders and other educators in the course of developing and managing exchanges with China?

Why Get Involved?

The motivations for exchanges can be found at three system levels in the U.S.: the individual scholar, the college or university, and broad national interests. For the individual scholar/researcher, academic exchanges with China (whether nationally-run or conducted by individual academic institutions) give the scholar access to archival resources not available in the U.S., make interviewing and limited survey research possible, permit limited natural science field work, provide opportunities to learn and develop Chinese language skills, etc.

From the university or college-wide perspective, and from the vantage point of particular disciplines and interest areas (such as cancer research, seismology, global change, China studies, agriculture, and the social sciences broadly speaking), work in China can contribute to faculty research and graduate education. In contemporary China studies today, for instance, it is becoming increasingly unlikely that a Ph.D. student will secure a teaching/research job without having had a significant research and/or study experience in the People's Republic.

Turning to the national level, our educational relations with China provide one (limited and uncertain) avenue to help shape a new leadership generation in China and a means by which to contribute to China's economic development, thereby, it is hoped, contributing to peace and stability in Asia. Of interest to American business is the fact that educational exchange familiarizes Chinese with American technology and products and the American presence in China helps acquaint large numbers of our citizens with Chinese problems so that our commercial initiatives are more clearly suited to Chinese needs. Finally, educational exchange is exposing the Chinese elite to a broader range of institutional alternatives as Beijing's leaders think about their country's own special needs. Institutional forms like the National Science Foundation, think tanks, and American university organization, for instance, have been of interest to some of Chi-

na's leaders. One ought not exaggerate the American influence—it clearly operates at the margins—but change almost always starts at the margins.

The Quantitative Dimensions

The major numerical contours of our exchange relationship with the PRC follow:

a) From 1979–1984 there was a rush in colleges and universities to sign agreement with Chinese counterpart institutions. Over 100 American colleges have at least one such agreement and many have several, with one institution having fifteen.

b) Many (49%) of the above-mentioned institution-institution agreements have *no one* moving in either direction, reflecting the fact that, in some cases, the agreements were symbolic exercises signed by visiting dignitaries that did not follow through when they returned home. In other cases, the agreements have floundered due to lack of funds, inadequate Chinese language capacity on the faculty and among graduate students, and because the "fit" between the Chinese and American institution was not good in the first place.

c) By the end of 1983, 20,000 Chinese students and scholars had been in the US and between 15,000 and 18,000 are here today. My guess is that about 4,000 American students and faculty have gone to China for either protracted research or study since 1979.

d) About two-thirds of the Chinese students and scholars who have come to the United STates have been in science and technology fields whereas about two-thirds of the American students and scholars who have gone to China have been in the humanities and social sciences. This field distribution raises questions for both sides. For Americans, issues of technology transfer loom, and for the Chinese the question of access to archives and field research opportunities is a continual irritant when dealing with U.S. scholars and students.

e) Finally, the percentage of total costs of Chinese "officially-sponsored" (J-1 visa holders) borne by the Chinese government declined from 54% of total cost in 1979 to 32% in 1983. The percentage of total costs borne by American universities was 18% in 1979 and had risen to 45% by 1983. While the Chinese government still picks up a higher percentage of the cost of its scholars than most other countries, the shift has been dramatic.

Three Basic Policy Issues

1) *American colleges and universities need to define more self-consciously their interests in academic exchange relationships.* It seems clear to me that many inter-institutional agreements were established for symbolic reasons and did not meet any enduring faculty and student needs. Consequently, many programs have no constituency, lack funds, raise expectations on the Chinese side,

and linger in a semi-moribund state that drains attention from more worthwhile endeavors.

Most fundamentally, university administrations need to distinguish *development assistance* and philanthropic motives from programs with a mutual research and teaching rationale. If programs are to be primarily development assistance for the PRC, then funds that are earmarked for such purposes need to be secured (like AID funds that colleges of agriculture throughout the country use elsewhere in the world). Programs in which the Chinese are the principal beneficiary need to be distinguished from programs in which there is a clear mutuality of teaching and research interest. Academic funds ought to be earmarked only for programs of the latter sort. Development assistance should be recognized as such, funded by national organs that are charged with that responsibility—colleges and universities should focus their scarce resources on the *mutual* teaching and research function. And, they should make clear to the Chinese counterpart, from the very start, what the university's interests are. If those interests cannot be served by the relationship, then the American institution should not start down the road with the Chinese counterpart.

2) *What level of the university should manage exchanges?* One of the most notable aspects of the evolving exchange relationship with the Chinese has been the desire of units at all levels of many colleges and universities to sign agreements with Chinese counterparts. There are agreements at the departmental, college, and the university-wide levels. While I am dedicated to both departmental autonomy and the proposition that American higher education's greatest strength is pluralism, many universities have lost the capacity to focus resources on the most worthwhile programs with China because central administration resources are dribbled away filling in the financial cracks in ad hoc deals worked out by lower levels of the university with no central coordination. In my view, a basic rule needs to govern all arrangements—that is, the unit making the agreement with the Chinese must demonstrate to the central administration that it can meet its commitments in the agreement from its own resources, out of resources obtained from elsewhere in the university as a matter of conscious policy deliberation on a university-wide basis, or from outside the university altogether.

3) *Ethical issues and preparing students and faculty for research and study abroad.* It has been my experience that universities need to do a better job in preparing their students and faculty for the experience of long-term residence in the PRC. Not only do American students and scholars need to be sensitized to both the physical and psychological rigors of life in China, but they have to appreciate the difficulties they will likely encounter in obtaining materials, access to research sites, and the generally low efficiency of research. While research in China is extraordinarily worthwhile for many scholars, the cumbersome bureaucracy with which one must cope, the absence of xerox, and the difficulties in gaining access to archives and specific materials all reduce efficiency. It is not healthy that American scholars have illusions in this regard—only frustration results.

Of course, many of the difficulties reflect the economic level in China which is, after all, still a very poor country. In addition, an element of data nationalism intrudes. The Chinese deeply desire to contribute to the intellectual advancement of mankind and they hesitate to allow unrestrained foreign access to their society and national treasures thereby allowing foreigners to make the contributions that they deeply wish to make themselves. As well, of course, there is the fact that in China's bureaucratic and political system scholars (indeed citizens) have never had an unrestrained "right" to data. In that sense, the American "right to know" can seem to both Chinese officialdom and citizens alike to constitute nothing more than demands for privileges which the Chinese themselves do not enjoy.

Finally, students and scholars need to be reminded of their responsibilities to the persons in China who become involved in their research. Contact with foreigners in China has always been problematic. Though China now is in an open phase, there is no ultimate assurance that it will continue uninterrupted. The American scholar, therefore, has to treat his subjects and assistants with sensitivity, not using them or the information they provide in a way that could subsequently boomerang to their detriment. The case of the Stanford anthropologist, Stephen Mosher, is a textbook example of how one ought not behave in the Chinese environment. Though universities cannot assure the discrete behavior of their students and faculty, they can make a more exhaustive effort to sensitize people to the obstacles and their responsibilities.

Concluding Remarks

In bringing some order to these remarks, let me conclude by making four summary observations and recommendations:

1) The United States now has better academic relations with the People's Republic of China than it has with most Third World countries. These linkages are certainly infinitely more extensive and mutually beneficial than those we have with any other socialist country. This is something to be nurtured and expanded.

2) American universities have not been sufficiently discriminating in establishing inter-institutional ties with Chinese counterparts. Defining our self-interest is necessary if ties are to be mutually beneficial and, thereby, durable.

3) There is a need for university administrations to assure that the expenditure of university resources serves university teaching and research needs. We should distinguish between philanthropy, development assistance, and academic exchange. There is a role for each, but the funding for each type of activity ought to be achieved with funds that were appropriated with that initial purpose in mind. As well, there is a need to make the units which agree to exchange relationships assume the financial responsibility for those arrangements.

4) All of us in the university community need to assure that the persons we send abroad in general, and to China in particular, are sensitized to the environment in which they will be operating. Our students and faculty should not depart with unrealistic expectations and they should conduct themselves with sensitiv-

ity and act responsibly toward those PRC citizens with whom they come into contact.

C. W. Minkel

A Latin Americanist Perspective on the Fulbright Program

The purpose of this presentation is twofold: first, to describe briefly the experience of a Latin Americanist geographer as a Fulbright scholar; second, to relate that background to my perspective on factors or conditions that may influence a Fulbright's degree of success in a given Third World environment.

My first direct contact with the Fulbright program occurred about fifteen years ago, when I served as a graduate dean at Michigan State University. The Fulbright Commission in Washington was at that time seeking someone to help develop a geography program at the Universidad del Valle, in Cali, Colombia. Due to political conditions in Colombia and its universities at that time, the assignment was subsequently shifted to the Universidad Nacional, in Bogotá; then to the Universidad de Bogotá Jorge Tadeo Lozano; and then to the Asociación Colombiana de Geógrafos (ACOGE)—all between the time I was designated as a Fulbright scholar and the time I could arrive in Colombia to begin working. As the assignment eventually evolved, it was to help develop geography as a professional discipline in Colombia. Because my administrative appointment at Michigan State University was on an 11-month basis, it was agreed that the 3-month Fulbright award would be implemented in two 6-week segments during the summers of 1971 and 1972. A second award was made for the summers of 1973 and 1974.

During the four years of my Fulbright affiliation with Colombia, a national meeting of geographers, with 90 persons in attendance, was held in Villavicencio, in 1971; graduate-level field courses were conducted in 1972 and 1973, in Tunja; and a similar field course was held in Sogamoso in 1974. A field course was also sponsored by ACOGE, in Bogotá, in 1975. Each of the field courses enrolled about 20 participants from all parts of Colombia, mostly professionals from various universities and government agencies. A high percentage of the participants subsequently enrolled in formal graduate degree programs in the United States, Europe, the Soviet Union and Brazil. An international meeting was held in Paipa in 1976, sponsored jointly by the Asociación Colombiana de Geógrafos and the Conference of Latin Americanist Geographers (CLAG).

It was then felt that Colombia was ready to inaugurate its first master's degree program in geography. This was finally accomplished in 1983 under the joint sponsorship of the Instituto Geográfico "Agustín Codazzi" (the nation's official map-making institution) in Bogotá and the Universidad Pedagógica e Tecnológica de Colombia, in Tunja. This program enrolls about 60 Colombian geographers, and the first master's degree will be awarded through the university in

Tunja in 1987. The organizer and director of the program is Dr. Hector F. Rucinque, who served as my counterpart throughout the Fulbright experience and received his Ph.D. in our geography program at Michigan State University in 1979. All of the above events have been followed with interest, and some with financial support, by the Fulbright offices in Washington and Bogotá.

From my perspective, factors that must be considered and problems that must be addressed in order to have a successful experience in a Third World, or developing, country would include the following:

1. *Political conditions*. I have noted some of the political conditions relative to my shifting assignment in Colombia. Political factors may require adjustments to be made but are seldom so severe as to cause much concern. Interrelationships between the local Fulbright office and the Washington office are important, as are those between the local office and the United States embassy, between the local office and the local government agencies involved, and between the Fulbright scholar and all of the above.

2. *Language and area expertise*. There are great numbers of applicants each year for Fulbright awards in the United Kingdom, Australia, Western Europe and other areas where English is the native tongue or is commonly spoken. Far fewer are the applicants for assignments in places where a "foreign" language prevails. In any event, appropriate language competence is fundamental. No less important, however, is a thorough knowledge of the local country, its people and culture.

3. *Diligence*. Most Fulbright, and many other, assignments are short-term. Consequently, it is very difficult to have any lasting impact without the investment of an intensive effort. That effort must be compatible with local conditions, however, if it is not to result in futility and despair.

4. *Stipends*. Fulbright awards generally provide only modest financial remuneration. It may not be practical for the Fulbright fellow to be accompanied by family members, especially if this affects a spouse's regular employment and/or causes the interruption of schooling for children. Without family the Fulbright fellow is likely to spend considerable periods of time alone.

5. *Counterparts*. Counterpart persons and host agencies must be firmly committed to successful completion of the project for which the Fulbright assignment was developed. In such case, any problems or obstacles that may arise will be minimized.

6. *Adaptability*. It is essential that one adapt well to the local environment. This may include rustic housing accommodations, a dependence upon local transportation, inadequate teaching and research facilities, unfamiliar customs, and a change of dietary routine. If the assignment is outside of the national capital city, an additional measure of adaptability and endurance may be required.

If one can cope successfully with all of the above, it is likely that strong lifelong friendships will result; one's teaching, research and linguistic skills will have improved; and one will have developed an appreciation both of foreign

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cultures and customs and that of one's own home environment. It is also to be hoped that one will also have gained a better understanding of some other part of the world and have made at least a modest contribution to its betterment.

Following my Fulbright experience in Colombia, and my move to the University of Tennessee in 1979, I served for four years as a member of the Area Advisory Committee for the American Republics. This involved the review of all proposals by United States applicants wishing to secure Fulbright assignments in Latin America and by Latin Americans seeking appointments in the United States.

Currently, our Graduate School at the University of Tennessee has responsibility for coordination of The Faculty Fulbright program. Our Center for International Education, working with the Faculty Senate's committee on international education, coordinates the Student Fulbright program, but in close collaboration with the Graduate School. All activities relative to the Fulbright Program are incorporated as part of an overall institutional plan for enhancing the international dimension of our entire university.

6. PERSPECTIVES ON RESEARCH FUNDING

Presiding: John P. Schaefer, *President, Research Corporation, Tucson, Arizona*

Speakers: Charles L. Hosler, *Vice President for Research and Dean of the Graduate School, Pennsylvania State University*

Karen Hiiemae, *Vice President for Research and Graduate Studies, Syracuse University*

Kenneth L. Hoving, *Dean and Vice Provost for Research Administration, University of Oklahoma*

Charles L. Hosler

Even for a meteorologist, an attempt to predict the direction of federal funding for research causes some hesitation.

I am optimistic about federal funding for university research. According to NSF, between 1977 and 1987 R&D funding from federal sources increased at an average of 10 percent per year. From 1986 funding increased by 15 percent. The 1987 budget also shows significant growth above inflation. The NSF appropriations for 1987 will be up 11.3 percent. The National Institutes of Health is up 17 percent. While there has been an overall increase, it has been concentrated in defense, space and general science with large decreases in energy and natural resources and environment. Pure extrapolation of trends is seldom useful in predicting the turns of the federal establishment. Events totally unforeseen can, and probably will, make any prediction obsolete in a very short time. Graduate and research officers do have to plan, however, and that planning requires at least a few assumptions about the likely course of federal funding for research and graduate study. I base my optimism on what I see as both the reality and the growing perception that the economic well-being of our country is inextricably tied to the rate of innovation and creativity in our universities and the production of graduates on the frontiers of their fields. The key words in Washington this year are *economic competitiveness*. The reality of a global economy has penetrated industrial and labor thinking as well as that of the political establishment. A cursory analysis of the trade balance for our country and the penetration of foreign manufactured products into our markets together with the slowing of exports of our products makes clear what we must do to retain our economic viability and in turn protect our political and social institutions.

It is well and good to proclaim that a university is where faculty and student scholars seek truth, or to advertise the excitement of science or the creative arts, but the prime mover in extracting funds from a federal establishment already deeply in debt is the fact that education and research may be our only chance of raising the productivity of our people and the marketability of our goods and services. Superimposed on the competitiveness theme will be a series of real or

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perceived environmental crises. To evaluate the reality of these environmental concerns, and to assess their importance and pose solutions will also require massive research efforts. Man's impact on the earth system has only begun to reach the consciousness of humankind and the realization of the degree to which we may radically alter life support systems is only beginning to become apparent. Efforts to solve these riddles will require global collaborative research on a scale never before contemplated. This research will not be confined to the physical and biological sciences but will, of necessity, embrace all of the social sciences and humanities. You have no doubt heard of the greenhouse effect and the role of carbon dioxide, but are you aware of the methane, nitrous oxide, methyl chloroform and chlorofluorocarbon increases and their parallel impact?

Environmental concerns (ozone, methane carbondioxide, and climate change are examples) are achieving growing importance in Congressional and administration thinking, but the issue of economic competitiveness is on the top of the agenda and is likely to remain there for the next decade.

We represent a shrinking five percent of the world's people and control a similar proportion of the world's natural resources. The advantages we possess are in the quality and diversity of our educational establishment and the role that it plays in the development of a large proportion of the intellectual potential of our population. It has become obvious that in spite of a history of increasing the fraction of our population who benefit from higher education, we are competing with nations who have looked at us and are about to surpass us at what we have up until now done best.

The solution must be that we give the opportunity to achieve their highest potential to an even larger proportion of our population, give them a higher quality experience and create a research environment as free and unfettered as is possible.

Government and industry will frequently support only certain classes of activity that promote their currently perceived needs and concerns. These perceptions may be more narrow than the creation of new knowledge requires or than independent creative scholars would wish. We, therefore, must develop our endowment and the level of private contributions to support kinds of scholarly and creative work not in the mainstream of current concerns.

The most revolutionary and useful ideas are not incremental extensions of current thinking but represent major course changes that are products of independent and unconventional minds roaming freely. American universities must provide for this freedom through support of creativity in all of its forms. This requires a sufficient endowment to provide for a significant level of creative work independent of mission agencies of government.

A relatively few universities have endowments or royalty income at a level to finance their own innovative research. Industrially-sponsored research is on the upswing but it is generally narrow in its objectives. It follows that the federal government is likely to be the primary funder of fundamental research in universities in the coming decade.

Fortunately, the federal administration, the Congress, and business and industry have recognized that economic competitiveness in world markets is keyed to research and innovation and the rapid conversion of research and innovation into products and services. This has resulted in moves in Washington to increase greatly the level of basic research in spite of budgetary problems. It is my estimation that these moves will succeed and that we are entering a golden era for university research. The worst probable scenario would be that we would remain flat for a year or two as Congress and the administration try to balance the federal budget. The vital role of universities in basic research has penetrated all but a few minds in leadership positions. It is recognized that the academic milieu with its penchant for independent thinking and tolerance for failure is more apt to result in major innovation and course changes than the incremental improvements or modifications to theory or practice more characteristic of industrial or applied research laboratories.

Opportunity for continued growth in applied research continues to be bright. Increased support from industry and from federal and state mission agencies is foreseen, including the need for interdisciplinary approaches to increasingly complex problems and systems. Perhaps more important than actual research results coming from sponsored research is the role that university research plays in the development of new intellectual talent and the sustenance of an environment in which that talent can cut its teeth. Since none of us can predict what directions intellectual breakthroughs will take, it behooves our society to maintain educational institutions of high quality and wide diversity. Diversity assures both a higher probability of innovation and a higher likelihood that we will have personnel who can handle whatever new technology might emerge.

In my estimation, current trends in research support are based upon a fundamental recognition of its essential nature. Many of the perceived threats to our national strength and vitality are perceived to have defenses based upon research and advanced education.

One cannot emphasize too strongly the need for scholarly research in the social sciences, humanities, philosophy and the arts to assess the impact of science and technology on the quality of life and to assure perspective and balance in the interaction between technology and the humankind. It is this component of support for scholarly work that is least appreciated by appropriators of funds. University administrators will need to be resourceful to find the funds to assure that the liberal arts and the humanities are able to be the conscience of the university.

In our various roles on the Washington scene and in interactions with our legislators we bear a special obligation to assure that mission agencies with their perceived needs are mindful of supporting innovative research in nontraditional fields. Larger federal support can be stifling to innovation if research objectives are narrowly defined. The usefulness and exportability of the most innovative technology is tied to broader aspects of education and to research in the social sciences. Some of the greatest failures to employ a new technology to the benefit

of mankind have not been so much due to poor engineering as due to a lack of comprehension of public understanding and reactions. Nuclear power is a good example.

All societies have knowledge and Ph.D.s—but the ability to translate this to a quality life and material wealth depends upon the breadth and depth of knowledge in the society at large and the ability of the society to deploy that knowledge within the context of the history, culture, economic and political structure of that society. Lesser developed countries have a few educated people but insufficient penetration of education through the society to enable them to function. Education provides not only knowledge but context and a feeling for how to bring it to bear.

Research dollars have in recent years grown much more rapidly than inflation. It is my prediction that these increases will accelerate and by 1990 we will have doubled the basic research budget of the federal government.

Competition for these increased funds will also be greater than in the past. Almost every institution has a plan to increase its research and graduate programs. This stems again from recognition of the key roles of these activities in economic development. This combined with the political tendency to spread funds by Congressional district or state may lead to very competitive circumstances for traditionally strong research institutions. The threat to peer review and awards based upon the merit of both proposed research and the investigator will persist and will not be eliminated but I would hope that all of us work to sustain a strong system of research awards based upon merit.

My greatest concern is whether we will have the talent to translate this into a higher quality of life and a more competitive economy. This apprehension is based upon demographic trends which legislate against increasing the talent pool and little indication that the basic education received by the shrinking pool will be adequate to permit flexibility in career choices. In science and engineering, fluctuating market forces have accounted for only about an eleven percent increase or decrease in people choosing such careers in the past, but just to have the same number of scientists and engineers in the 1990s would require 35 percent increase in those choosing these careers according to data collected by National Research Council and the NSF.

Karen Hiiemae

Perspectives on Research Funding—The Private Sector

Since 1980 there has been a major shift in the pattern of research support. These changes will not be reversed and so set the context for the remaining years of the eighties and beyond.

In 1980, with a few notable exceptions, universities obtained almost all of their research funding from federal agencies and primarily HHS (including NIH)

and NSF with EPA, DOE and others adding into the available resource pool. DoD was not a major player since the Mansfield amendment restricted its support to strictly mission-oriented research. With a few notable exceptions, corporate support did not feature on the research budget.

In 1986, we are seeing the impact of the Strategic Defense Initiative. DoD is active in a wide variety of areas beyond SDI. Despite this year's favorable Congressional action, NSF and HHS research support for extramural programs has remained in an almost steady state. We are in an environment where ballooning federal and trade deficits are beginning not just to worry but to affect lawmakers, and where the corporate community is painfully aware of the impact of shifts from a manufacturing to a service driven economy. Local and state governments are concerned about regional economies and are focussing on drives toward economic development. New flags have been hoisted.—"University-Industry-Government Partnerships", "Technology Transfer" or to put it bluntly, "research to give us jobs". Those flags symbolize the new challenges we face and largely dictate the way the many entities that support research are changing their roles and policies in a new economic climate.

So much for the general—what does this mean for individual institutions? Syracuse is perhaps an excellent example of the impact of so rapid a change, not least because we do not have a Medical School or Health Sciences Center. We do have a College of Engineering, a variety of major thrusts in Computer Research and strong basic science departments, as well as a distinguished and very well-funded College of Education and the Maxwell School of Public Administration. Syracuse has had an annual increase in its sponsored research funding of some 18% a year for the last five years. At the beginning of the decade, that research support was derived, in round figures, as follows: NSF 30%, NIH 32%, other HHS 32%, 2% from other federal and governmental sources and 1% from corporations. Last year, i.e. fiscal year 85/86, SU's research support in the narrowest sense, that is sponsored research projects investigator-inititated, came as 26% from the corporate sector, 21% from DoD (not SDI) and of the remaining 53% the split was approximately 33% NSF, 32% NIH and 33% other HHS. For SU this means that the growth in sponsored research activity has been an "add-on" from new sources rather than an expansion of the traditional base and a major resource in that add-on has been the private sector. About three years ago the state of New York created seven "Centers for Advanced Technology" to facilitate technology transfer and economic development. Each receives $1M in state support which has to be matched one for one. The Syracuse Center for Computer Applications and Software Engineering (CASE) has been highly successful, receiving some $2–$3M annually in corporate support.

I have every reason to believe that this trend will continue and for reasons that are attributable to the general economic climate as well as to the shifts in the pattern of research funding since 1980. I am sure someone is already writing a Ph.D. thesis on the sociology (in its broadest sense) of the Saturn project. That competition could be seen as the adoption by the corporate world of the tradi-

tional methods of federal agencies in determining who gets the big projects. It involved the states—who had to offer inducements—local governments and school districts, local universities and, I am sure, others. The Superconducting SuperCollider is the next definitive major U.S. research initiative and will have an impact on this nation's scientific standing analogous (if less overtly comprehensible by the population at large) to the early phases of the space program. (Unfortunately for the physics community, smashing invisible particles into even less visible particles is not as "media grabbing" as firing a man into space.) Saturn and the competition for the SSC are dramatic examples of the new partnerships evolving between universities, their communities (including the local corporate sector), local and state government and, often, the federal government, in the development of research. They also reflect a new trend: partnerships between the university and the corporate sector have to be in place *before* the competition for federal funds: the NSF Engineering Research Centers are one major example.

What is likely to happen now? If we have learned anything from the experience of the last six years, it has to be the increasing interdependence of the private and governmental sources of research support. That is not, in my judgment, likely to change. It operates at the level of small as well as large projects, in the support of special research groups, the centers we all have, as well as in the more traditional mode of the single PI or faculty laboratory.

In assessing the likely pattern of private sector support in the next few years, we must be clear about the variety of "private" support available to the research community.

First: The foundations. By and large they are mission-oriented and do not support basic research but rather projects consonant with their mission which may have a classical research spin-off. Let me give you an example: Syracuse has just been awarded $3.7 million by the Kellogg Foundation to organize and make readily available to the larger research community the resources of its materials on adult education. This is a project with a clearly defined goal but one which will use state of the art technology, which will itself require a research effort. Foundation support for academic efforts will continue. The variables are, of course, possible changes in their missions consonant with changes in perceived societal needs and the state of the economy and so their revenues.

A clear distinction has to be made between corporate *philanthropy*, which often has educational or academic goals and is the responsibility of corporate foundations, and corporate *sponsorship* of research. The latter is usually the responsibility, depending on corporate structure, of the Research and Development Division, and is governed by the budget of that division. Corporations are not philanthropists. Rightly, given that they are accountable to their shareholders, they are interested in what's in it for them, not what's in it for the faculty researcher. When the two mesh, a very productive relationship follows. If the mesh is not there, then significant problems can arise. However the traditional biases of NSF and NIH toward basic research and the corporate sector toward

applied research are unlikely to change in the short term. We heard much three or so years ago about the "Biotechnology Revolution" and the Hoechst and Monsanto carte blanche contracts. The gilt has left the genetic gingerbread, at least until the testing issues are sorted out. That type of massive funding for a single area is not, I think, likely to occur again in the near term.

A more immediate question relates to the impact of the changes in the Tax Reform Law. We have all seen various gloomy or not so gloomy prognostications as to its effects on philanthropy. The law applies as much to the voluntary health organizations like the March of Dimes, American Heart and American Cancer, all of which fund basic investigator-initiated research, as it will to the issue of the massive gifts so much sought by those responsible for capital campaigns. Revisions to the old tax law allowed corporations a tax credit for equipment donations to universities. The new tax law contains a new "university basic research" tax credit designed to encourage corporations to sponsor university research. The credit applies to research paid for with actual dollars, not to donated equipment and services. There must be a contractual relationship and the support must be for basic research. The exact language is: "any original investigation for the advancement of scientific knowledge not having a specific commercial objective." We have here a clear example of legislative intent to facilitate greater support of basic research by the private sector.

Gazing, with some trepidation, into the crystal ball, I have to report that I believe this pattern of an increasing reliance on the private sector to support university research will continue. The economic auguries are such that federal support for basic research will not increase substantially in the face of the deficit. This does not mean so say that the "competitiveness" issue will not lead to enhanced support in some selected areas with clear economic impact; robotics and manufacturing systems technology might be such areas. The only exception will be mission-oriented efforts with identified revenue support such as the new Superfund legislation. Whether industrial or corporate support will shift from a preponderance of applied research such as testing and product applications development to the more basic research hitherto sponsored primarily by federal agencies remains to be seen. Unfortunately for many institutions the familiar story of the "rich get richer" will continue to operate: corporations tend to put their money where they see the relevant expertise, and "seeing" all too often means antecedent knowledge. Those institutions with long-standing relationships to the corporate sector, coupled, and I emphasize this, with track records of excellence in the field in question, will get support; those without that history are unlikely to do so.

Kenneth Hoving

I shall be talking today about the impact of recent state legislation on the graduate research programs at universities. Virtually every state has initiated one

or more programs designed to aid the economic development or diversity of the state, and nearly all have some involvement with the university.

State legislatures have increasingly begun to look toward the universities for assistance in developing, as well as recruiting, new business and industries for the state. I am firmly convinced that we can be of assistance in these endeavors, but I think the time frame in which we are likely to have any significant impact on the development of new industries is much longer than most legislators expect—most likely in a ten- to twelve-year time period rather than in the three- to four-year period in which they are interested. I believe it is potentially dangerous for us to oversell the immediate impact of support for research and graduate education on economic development.

Working with the state legislature in Oklahoma has helped make significant funds available to the University. We have an NSF EPSCOR Grant in Oklahoma which enabled Oklahoma State University, the University of Tulsa, the University of Oklahoma, and some of the state's four-year institutions to work with the state in an effort to increase the competitiveness of researchers in the state for NSF funding. In an effort to determine what our universities needed to do to become more competitive, we invited the chairs of both the House and Senate Higher Education Committees as well as the governor's staff person for higher education to join us on a visit to the University of Texas. On that visit our legislators realized that a strong university with outstanding faculty can attract industry as well as spin off new industry. As a result, we were able to work with the legislators to draft legislation designed to increase the number of endowed chairs and to provide funds for research equipment and health-related research. The legislation was funded in a year when there were major reductions in our state budgets.

Several elements, I think, were key: the universities presented a united front to the legislature; we got to know, and I urge you to get to know, the key players, starting with representatives from the district in which you are located and then moving to chairs of committees important to the interest of the universities. In our case, the trip to another state removed us from the innumerable distractions of the home turf, so to speak. The value of the out of state "expert" whom they respect can't be overestimated. The governor helped establish a Council on Science and Technology with representation from the business and industrial sector, the legislature, and the educational institution. They lobbied, much more effectively than we at the University typically do. The long-term impact of these programs is obviously difficult to tell but it has certainly created an excitement which did not exist previously among the faculty, and has provided us with some essential equipment and research support. The programs I have just described are in no sense unique, and the dollar value much less than that involved in many currently more prosperous states.

In looking at some of the things other states have done or are doing, I've noticed several commonalities, the most frequent one being the allocation of state funds to universities for research in targeted areas—usually those with

economic potential for the state—funds which must be matched by industry sponsors. I saw very few, if any, programs designed to strengthen research and scholarly efforts of the faculty generally, with virtually no programs designed to aid work in the humanities, social sciences, and the arts. Programs fitting this configuration have evolved in Kansas, Michigan, Missouri, Ohio and California to name a few. A program at Kansas, for example, passed in 1983 with an appropriation of approximately $600,000 is a research matching grant program to stimulate high technology economic development and enhance employment opportunities in the areas of agricultural and industrial processes, biochemistry and biotechnical processes, computers, engineering, natural resources, plastics, and telecommunications. State funds are invested in projects at institutions with a match of 150% from a sponsoring industrial firm.

One California program, entitled "Microelectronics Innovation and Computer Research Opportunities" started approximately five years ago is designed to help the California electronics and computer industries. Its two basic components are (1) the support of research projects and research assistants associated with the projects, and (2) the award of fellowships to students in specific fields. When submitting proposals, faculty members are responsible for obtaining the industry's prior commitment to support at least half the cost of the project. In 1984–95 the state provided $4 million for this program that resulted in 89 projects that are supported with an additional $8 million in industrial contributions.

Michigan has a state research fund of approximately $21.7 million with the same general guidelines. Missouri, Ohio and Pennsylvania and many other states have programs of this type. The only real exception was the $35 million program announced a year ago in Texas that awarded grants of $250,000 for two years that did not require industry participation.

A second theme which seems to have emerged is the allocation of significant sums of money to establish research centers. For example, the New Jersey fiscal year 1987 budget includes a recommendation of $6.2 million for the New Jersey Institute of Technology for programs to expand the excellence initiative started in 1986. The funding is for the establishment of high technology chairs, the upgrading of equipment and library acquisitions, and other support services.

Arizona has mounted a five-year, $50 million program to establish Arizona State's Engineering Center of Excellence. The areas of specialization selected are clearly those which have relevance for high tech economic development. Maryland has appropriated $2.5 million to the University to support the development of the Maryland Biotechnology Institute which will serve as an umbrella organization for more focused research efforts to be carried out in at least four different research centers. Each of the centers will be separated from individual university campuses but with close linkage between faculty on each campus and with faculty wishing to do so being assigned as fellows to the center.

In many cases the move to establish centers of this type appears to be an effort on the part of the legislature to target funds for specific research areas rather than to increase the budgets of state universities. I don't wish to judge our leg-

islators harshly, but they appear, perhaps with some justification, to prefer to make such designated funding rather than to increase budgets more broadly.

A much smaller number of states have initiated programs in which the state has attempted to catalog the research interests of the faculty within the state. Michigan has been involved in doing so for several years, and we in Oklahoma have just evolved such a system. We had the faculty at Tulsa, Oklahoma State, and the University of Oklahoma list their research interests on a form to be converted to a computerized file. We are now in the process of working with the Department of Commerce so that industries within the state as well as prospective ones can determine the characteristics and location of researchers who might be of assistance to them either as consultants or in terms of research programs. The system we have installed is just coming on line and we have had no experience to date.

A number of states have put in place a procedure by which universities and the faculty of the university are involved in the evaluation of inventions which may have commercial potential. Iowa has a program for innovation at the Iowa Center for Industrial Research where inventors can obtain assistance in developing ideas or inventions as well as receiving an assessment of the invention's marketability. The staff of this center, as well as Iowa State researchers, review disclosures at no cost and determine marketability. After the initial review, for a $75 fee the inventors may receive a more detailed evaluation. The center assumes no ownership or equity in the program.

I attempted to determine whether there were states providing tax credits to industry for their investment in research if done with universities. A significant number of states do offer tax credits to develop investment capital funds and to assist investors, but I found none that provided tax benefits at the state level for investments in research at universities. If there are any, I think it would be important to learn of the impact of such legislation as well as the estimated costs to the states themselves.

This brief enumeration indicates that a great deal is going on in this arena. Much of it is very exciting and of potential significant help to the research and graduate community as well as to the states themselves.

PLENARY SESSION VII

Friday, December 5, 1986

GRADUATE STUDENT FINANCIAL AID

Presiding: Allen Sanderson, *Assistant Provost, The University of Chicago*
Speakers: Sheila Cooper, *Special Assistant to the Dean, Indiana University*
Patricia A. McWade, *Assistant Dean for Admissions and Financial Aid, Harvard University*
Dwight Horch, *Director of College and University Programs, Educational Testing Service*

Sheila Cooper

About 25 years ago, when The Woodlawn Organization was challenging a major private research university on Chicago's South Side, Saul Alinsky noted that there were two important sources of power—money and people. The University of Chicago, the rich villain in that particular drama, had the money, and he and The Woodlawn Organization (TWO) had the people. It was the people, Alinsky saw, who could achieve the ends he had in mind.

Most graduate schools, like the residents of Alinsky's Woodlawn area, are the poor, peering in from the periphery on their relatively rich central administrations. In the struggle that most of us have in trying to convince the central administrations of our respective universities that graduate financial aid should have a larger share of university resources, we have relied too much on merely arguing our position. Perhaps what we need to do is to take our cue from Alinsky and convert passive actors—our people, as it were—to activists. We need them.

Our arguments for increased financial aid, as morally and logically persuasive as we believe they are, are met with strong arguments from competing voices, emanating from other deans and schools that promote matters like faculty salaries, equipment needs, facilities. These are causes with which we readily and necessarily sympathize, for they are crucial to graduate programs as well, and we are happy to address them along with our own concern for graduate financial aid. Our problem lies with the fact that while those who expound these competing interests are sympathetic to the question of graduate financial aid, they are not willing to place it among their top two or three priorities. They see it as the graduate school's responsibility, not theirs.

We at Indiana argue, as I am sure many of you do, that student support is intimately tied to student quality, which in turn is intimately tied to program quality, faculty retention, and—because so many of our graduate students teach

undergraduates—to the quality of undergraduate instruction. Everyone sympathizes with that argument. It is logical and a position well taken.

But the voices of other academic deans, deans who leave the argument for graduate financing to the graduate school, become a chorus of shared priorities which drowns out the solo of the graduate dean and his or her staff. Although presented in an atmosphere that exudes good will and empathy, graduate school requests for student financial aid lose out. We could live with that, I think, if we knew that every fourth or fifth or even sixth year the University would hear us. But the voices of other deans are not periodically silent. There is no moratorium on their requests, and the five or ten or twelve deans of other academic units continue perennially to clamor for the available funds and combine perennially to drown us out—if we let them.

I am, like Alinsky, issuing a call for mobilization. I am proposing to you that you go home and count noses. And start counting with your students. No one is more interested in increased assistantship stipends, dissertation-year fellowships, support for master's projects than your students. And most of us have hundreds, if not thousands, of students. Some of us, I know, are in a better position to activate this generally passive group than others. We at Indiana have taken three or four years to build a very effective graduate student organization. It can be done more quickly. Many of you have had active organizations for years; many of you have the structure in place for such an organization or already have an organized but relatively passive group. Financial aid, however, will interest our students and one of the positive features of the 1986 tax reform act is that it can serve to focus student attention. And it will certainly focus that attention if students' take-home pay is reduced because of withholding.

Our own students were keenly distressed about the withholding we did on October 1st—temporarily until we had an interpretation of the effective date of the new tax law. Although they knew about the withholding in advance and fully understood it was a federal—not a University—move, they demanded an audience with our central administration and in time received one. They also were very vocal within their departments. As a result we at the Graduate School had a number of calls and letters from chairpersons and other faculty—promising help, apologizing for not making student aid a higher priority in their own budget requests, and committing themselves to making graduate support their first priority in their budget hearings this spring. It helps that the Graduate School deans attend departmental and professional school budget hearings, for our presence there this spring may keep some people honest. And we will most surely write to all deans and chairpersons before the budget sessions to remind them of their commitments to their students.

I know, from our own experience in Indianapolis with our non-health graduate programs, that part-time, non-traditional master's students are a much more difficult group to mobilize. However, the effect of having a graduate student organization at the Graduate School level has meant that departments hitherto without their own groups have organized their students in order to have repre-

sentation on our graduate student organization. Such departmental groups give the students more visibility and often, as I have noted, more influence in the department. In many cases, the students have become heavily involved in departmental responsibilities, taking on, for example, recruitment activities. Departments cannot then ignore them.

But let us count other noses, for a moment. I have indicated how the students can help make faculty more sensitive to their financial needs. But faculty can be recruited to serve the cause more actively in a number of other ways. We all have graduate faculty policy committees or other faculty groups with whom we work. Resolutions by those groups, signed and sent to chief executive officers and budget deans are helpful. And committee members' willingness to speak up in their own departments and schools for the centrality of graduate finance to their academic mission is useful. Push them for that commitment. Most of them believe unquestionably in support for and aid to graduate students. They need to know how they can support it more audibly. We have to tell them how, to give them direction, because we need their voices to form part of our chorus. To be sure, faculty have to make difficult choices—student salaries or faculty salaries, fellowships or personal computers. Their students can help them choose and so can we as administrators.

Turning from faculty in general, let me say there are also special groups of faculty members who can be helpful to the cause. In our case it is our Concerned Titled Professors, who meet together regularly. Perhaps your titled professors, or your university research professors, do not identify with each other as a group. But call them in and form them into one for this purpose yourselves. They are, by the very nature of the positions they hold, singled out as people concerned about research and scholarship, about the quality of work done in their fields, about having people around who are intellectually gifted and academically oriented. Graduate financial aid is a banner they can rally around with the dignity that we all attribute to research professors.

For those of you who offer master's degrees as your only terminal degrees, you may find your greatest faculty allies in those departments where people identify with the research university model and where there is a need for student help as graders, laboratory assistants, and the like. Those faculty too serve on committees. Use them to help. Frequently they are eager to, but they too need direction, and the graduate dean's office has to provide it. To the extent that you can have them speak up—not only to the chief executive officer and budget dean but to the academic deans who handle their program and instructional budgets—to that extent you are strengthening your chances to be heard.

Each of us faces a somewhat different set of circumstances. I think it is altogether too easy to assume that since we are, as it were, the highest part of higher education, we should get our fair share of the budget without having to participate in the fray. Some of us may be that fortunate, but most of us are not. Saul Alinsky does have something to teach us about community organization. And graduate deans do have a community. If you find the idea of community orga-

nization a bit too radical for your taste or style, think of it as consciousness-raising. But it really is more than that. You must get others to speak—and not to you. They need to speak to those who control budgets. I have talked about students and faculty, but I have merely alluded to central or campus administrators. Their consciousness needs to move up a notch or two as well. By coincidence Indiana University has had more problems with taxes this year than simply the new tax bill. About a year ago we began to learn that the Indianapolis-based IRS auditors were giving both our Bloomington and our Indianapolis graduate students their undivided attention. Responding to that challenge, we asked our vice president to form a graduate support committee, which the impending tax legislation made all the more necessary and desirable. Thus weekly or oftener, the Dean and I and two of the members of our graduate student organization's executive committee closet ourselves for two or three hours with the budget dean, the bursar, the controller, the head of payroll, the dean of faculties, and our university counsel.

We have with this help been restructuring our financial aid system, but in the process we have turned an *ad hoc* committee reporting to the Vice President into a permanent committee, chaired by the dean of the Graduate School, who also sets the agenda and calls the meetings. Thus the second positive contribution of the 1986 tax law is that it allowed us the opportunity to focus on graduate aid the attention of a group of very important administrators, all of them key to the university budgeting process but most of them distanced from academic programs in general and graduate education in particular. They are now actively involved in addressing the question of graduate student financial needs and in coming up with answers and money as well. We see this as the start of a promising and continuing collaboration, albeit once our new financial aid structure is in place—by January first—collaboration will not be quite so urgent.

One other contribution of the new tax law—and a month ago I could not have imagined my telling you this—is that we have had to determine whether our financial aid is payment for services rendered or whether it is honest-to-goodness scholarship and fellowship money. While this division of aid into one category or the other has been most painful, the division has also made us realize our "aid" as such has been less than we had thought. In other words, the University has been able to kid itself into thinking it provides more generous aid for graduate students than it does.

Behind the idea of support for graduate students is a general belief that financial aid goes to more or less equally deserving students. Consider, however, stipends and fee remissions for resident assistants in the dormitories, assistants who may have wonderful capacities to contend with undergraduate angst at two in the morning, but who may well not be students who, in terms of their academic programs, are very deserving. We have, as many of you do, outstanding graduate programs, some without corresponding undergraduate programs, that have many fine students who have minimal support at best. Labelling non-academic jobs of students in a single category with other types of support like

scholarships misleads or deludes us all. And it works to the detriment of those of us who are trying to put graduate aid on a rational basis.

The task we face of obtaining increased resources in a period of financial stringency is formidable, but it is not impossible. We need as many allies as we can find, and they are possible to recruit. Also we need to insist that any dollar that reaches a student's pocket should not *ipso facto* be considered a contribution on the part of the university to further graduate education and thus partial payment on its commitment to academic excellence. Unfortunate as we all consider it, the 1986 tax act does provide us with an opportunity. We need not let it slip.

Patricia A. McWade

When Allen Sanderson asked me to speak to you today about graduate financial aid, he asked that I comment on how to "make do" and "make the best of" the traditional financial aid sources available to graduate students; how to make the *best* use of your own instructional funds; how to effectively locate *all* of the available *outside* funds and to have your students compete well for these funds; how to apply for *and* administer federal programs—Title IV loans and Work-Study, Title IX, National Graduate Fellows Programs, Patricia Roberts Harris Fellowships, etc. . . . He asked me to comment on the need analysis issues as they relate to graduate students, the challenge of allocating resources across the various disciplines and over program length, foreign student issues, and equity concerns. He asked me to address these issues in 15 minutes . . . and so I have selected a *few* of them to discuss with you.

Many of us are wondering how the Reauthorization and Tax Reform Bill changes will affect us as we administer our aid programs and how the changes will affect our graduate students.

We know, for example, that graduate students may now borrow up to $54,750 in Guaranteed Student Loans. The annual loan limit is now $7,500 and all graduate students must now undergo a full needs test to qualify for a GSL. We know that loan consolidation is possible once again. We have all heard about the increased level of indebtedness our graduate students have accumulated during their undergraduate years. Many are now coming to us with over $8,000 in undergraduate debt.

Many of us are spending our time learning about tax reform. CGS has taken a leadership position in this area. Tom Linney now knows more about tax as it relates to graduate student stipends than *anyone else* I know. How much funding do we need to set aside to compensate for the tax bite many of our students now face? Not only do we need to know what the *federal* interpretation of tax reform for graduate students will be, but we also need to learn what our individual *state* governments will do. In the Commonwealth of Massachusetts, for example, we expect the state tax will resemble the federal tax whereas in California the same interpretation may not apply. At Harvard we have begun to discuss tax reform

with our students and are about to provide some examples of the amount of tax we *estimate*, and I stress *estimate*, will be due. We figure our Teaching Fellows and Research Assistants may be paying something on the order of $1,000–$1,500 in tax—federal and state. We are now facing the question of from where those additional support dollars will come. We in the Financial Aid Office feel the pressure of providing information and answers to students and faculty on this important topic. This additional expense, combined with the increased cost of living in the Cambridge area (not to mention tuition increases), has given us much to consider as we plan our financial aid budget for the Graduate School.

We have learned that through Reauthorization we can now use College Work-Study funds to finance job opportunities in the private sector as well as on our campuses, but many of us have little or no work-study funds at the graduate level. How many of you currently use work-study funds for your graduate students?

On Wednesday Dean D'Arms from Michigan mentioned his idea of forming a Financial Aid Task Force at the Graduate School to ensure that graduate students are getting their fair share of your institution's Title IV dollars—College Work-Study and National Direct Student Loans (at 5% interest rate). Are you taking advantage of this opportunity to utilize federal College Work-Study dollars to help finance your Teaching Fellowships and Research Assistantships? If any of you are interested in discussing the mechanics of such an arrangement, I know that Jules LaPidus at CGS would like to hear from you.

We have learned that graduate students are now by definition *independent* for purposes of federal aid programs *if* they will not be claimed as anyone's dependent for income tax purposes in 1987. This change in the law will no doubt make more graduate students eligible for programs like College Work-Study and the timing may be right for you to renegotiate the graduate school's share of federal Work-Study funds on your campus.

Reauthorization was good for graduate students. I think we have finally succeeded in getting appropriate federal legislation for graduate funding. But, as Howard Silver and John Vaughn mentioned Wednesday, we must work hard to get these programs funded at a suitable level. Right now we face the prospect of having no new competition in either the National Graduate Fellows Program or the Patricia Roberts Harris Fellowship Program. This is *not* good. We *must* have a new competition in these programs each year and we *must* have our voices heard in Washington so as to get a supplemental appropriation for these programs—NOT TO MENTION the new Coleman program and Owens program which have been authorized under Title IX but will receive no appropriation until the funding triggers John Vaughn mentioned are met. We need to get plugged in to how we can effectively have our voices heard on Capitol Hill. But what else can we do, when we get weary trying to keep up with what's happening in Washington?

Assuming we are all interested in helping our students locate funding sources, especially grant and fellowship sources, I wonder whether we could do more in

the area of grantsmanship with our students? At the Graduate School at Harvard, for example, we have recently run a seminar on grantsmanship and hope to do more of this type of thing. We hope to better inform our students about the grant-seeking process, about the nuts and bolts of writing the grant proposal, about identifying all of the possible funding sources.

For the past ten years we have been putting together the *Graduate Guide to Grants*—an annual publication which lists over 200 sources of funding for Ph.D. candidates in Arts and Sciences. I now understand that Stanford and several other California graduate schools have an on-line grants data base and I recently learned that the University of Washington has a similar grants data base.

I hope you all have seen the publication called *Grants for Graduate Students* compiled by the University of Massachusetts at Amherst. It is now being published by Peterson's Guides. I think we need to work harder to inform our graduate students and prospective graduate students about all of the possibilities they have for financial support.

Many of us offer institutional fellowships for tuition and some offer stipends for living expenses too. How do we communicate our award offers to students? I think we may need to work harder to inform our students about the many options for financing a graduate education. Most of us offer teaching assistantships, research assistantships, administrative assistantships and, in the case of Ph.D.-granting institutions, many of us offer multi-year financial awards. I think it's important for us to inform our students about their *total* aid "package" and to provide them with a *centralized* award notification listing all grant, loan and work options. Too often graduate students are expected to know our financial aid jargon, to understand the administrative idiosyncracies of our particular institutions. Students are confused and confounded by the process. I think we need to work harder to demystify the funding process for them. To this end, I have written a brochure on *Financial Aid for Graduate and Professional Education*, published also by Peterson's Guides, in the hope that graduate students can become better informed about financial aid possibilities.

I wonder how many of you have seen Arthur Hauptman's book, *Students in Graduate and Professional Education: What We Know and Need to Know?* I was delighted to receive this book and encouraged to see that the concerns of *graduate* school admissions and financial aid are addressed. Too often when we read about admissions and financial aid the issues are undergraduate issues. This book contains a listing of federal fellowships for graduate students as well as a selected bibliography of studies and data sources relating to graduate education. Arthur estimates that $5.7 billion in financial aid was provided to graduate students in 1984 as compared to $1.9 billion in 1974—a *40%* increase in constant dollars. The bad news is that loan dollars represent the principal source of this increase.

It's difficult indeed for us to generalize when we come together to discuss graduate financial aid. It strikes me, however that we need to keep talking to one another *and* to our students about this very important topic. We need to keep

our network open and *to share* information as much as we can. To this end, I have been working for the past six years with Dwight Horch and his colleagues at ETS on a Graduate Financial Aid Education and Training Committee. GAPSFAS is sponsoring a series of regional graduate financial aid workshops around the country, beginning in January and culminating in their annual GAPSFAS National Forum in Washington in February. I don't know how many of you hear about these events and thought it worth mentioning them to you.

Well I have touched on only a few of the good suggestions Allen Sanderson gave me for this session, but I hope I've given you some ideas about how to "*make do*" and "*make the best of*" your graduate financial aid resources and maybe a few insights on the types of additional support you can provide to assist graduate students and your financial aid staff in their search for graduate school funding sources.

Dwight Horch

Who should pay, who should benefit, and how is federal student aid to be administered for the balance of this decade?

Those are the questions addressed by the Higher Education Amendments of 1986, signed into law begrudgingly by the President on October 17, 1986.

From the perspective of the graduate education enterprise, three observations about the bill seem readily apparent:

- the graduate education community was extremely effective—by admission of Hill staff—in presenting its case to Congress.
- Congress followed the blueprint for graduate student aid drawn by the Brademas Report to the National Commission on Student Financial Assistance in 1983.
- The new bill expands eligibility of graduate and professional students for existing Title IV programs (such as the federal student loan and work programs), and makes important changes in Title IX fellowship programs.

My remarks today are focused on two aspects of the new Amendments: how the federal student aid programs—particularly loan programs—will change and how student eligibility will be determined (that is, how need analysis requirements will change), and how those changes are likely to affect your schools and the students you serve.

Context. Federal student aid funding is on the decline, and that trend is not likely to change as a result of the new bill.

Earlier this year the College Board issued an updated report entitled "Trends in Student Aid: 1980–1986." That report revealed some interesting statistics which help to put the new reauthorization bill into some perspective:

- Loans accounted for 50 percent of the $21 billion in student financial aid available in the United States in 1985–86, student employment accounted for a mere 3.3 percent and grants accounted for 46.7 percent. At the grad-

uate school level, other studies have revealed the even heavier reliance of postbaccalaureate students on loan programs.

- Measured in constant dollars, there have been significant declines in campus-based federal student aid. Between 1980 and 1985, for example, aid per recipient declined by 14 percent in the GSL and CWS programs and 19 percent in the NDSL program.

If the recent past is any indicator of the immediate future, then we should not expect to witness a significant infusion of new federal student aid funds to meet the expanded eligibility of graduate students legislated by the new reauthorization bill.

The Higher Education Amendments: An Overview

In summarizing the new bill as it affects graduate students and schools, my remarks focus first on programs, then on the new across-the-board need analysis requirements that apply to undergraduate and graduate students alike.

Loan Programs. The new bill dramatically increases student loan borrowing limits for all of the major loan programs, and makes borrowing for education more expensive for students.

All other federal student aid programs pale in comparison to the Guaranteed Student Loan Program, which has grown in current dollars from about $6 billion in 1980 to almost $9 billion in 1985. The new bill guarantees that program's continued existence and similar growth in the future.

Guaranteed Student Loan Program. Congress substantially raised the borrowing limits for the GSL program, from $5,000 per year capped at $25,000 in aggregate, to $7,500 per year and $54,750 in total. Simultaneously, Congress mandated that all students, to receive a Guaranteed Student Loan, must demonstrate financial need.

And finally, interest costs paid by the student were increased. Under the new formula, beginning in the fourth repayment year, the interest rate on GSLs jumps from 8 percent annually to 10 percent.

Supplementary Loans for Students. This program is the successor to the Auxiliary Loans for Students Program with two important differences: these loans are variable rate loans (capped at a 12% interest rate) and students may now borrow up to $4,000 per year from the program (up from $3,000 under the Auxiliary Loans for Students Program.)

National Direct Student Loans (Perkins Loans). Loan limits for the NDSL program were also increased: from $12,000 in total to $18,000 overall. Graduate students may now borrow up to $9,000 for their undergraduate educations, and a similar amount for their postbaccalaureate training.

Taken together, the new bill increases loan limits to something approaching $100,000 (actually $92,250 to be exact.)

Consolidation. During the reauthorization hearing, the higher education community expressed concern about growing levels of indebtedness, and asked Con-

gress to reinstitute the loan consolidation program. Under the new loan consolidation program, students who have borrowed more than $5,000 in total or in combination from the major federal student aid programs may consolidate their loans into one note, and may elect to pay off their loans over a longer repayment period (up to 25 years for students who have borrowed $20,000 or more to finance their educations).

The theory behind the new loan consolidation program is that heavily indebted students will have lower and therefore more manageable monthly repayments if they are allowed to take more time to pay off their loans. That's the theory. In practice, however, loan consolidation greatly adds to the cost of the loan from the student's perspective, and to the profit margin from the lender's perspective.

College Work-Study Program. A number of graduate schools use the College Work-Study Program to fund assistantship stipends for needy graduate students. The new bill permits you to continue to do so, but ups the ante. Under the rules governing the College Work-Study Program, institutions are required at present to fund 20 percent of the work-study student's earnings with institutional matching funds. The new bill increases the institutional matching requirement to 25 percent in 1989–90, and 30 percent in 1990–91.

Need Analysis. Under the new law, graduate students must demonstrate financial need in order to qualify for Title IV funds (such as GSL, NDSL, and CW-S) and also in order to qualify for Title IX fellowship funds.

Financial need analysis at the graduate and professional school level has been common practice at private graduate schools and a few public graduate schools since 1972, when the Graduate and Professional School Financial Aid Service was founded.

Because the new Higher Education Amendments mandate need analysis for all students applying for Title IV and Title IX financial aid, financial need analysis will become more commonplace among public graduate schools in the years ahead.

It is no secret that financial need analysis is seen by some graduate school deans as antithetical to the aims of graduate school financial assistance. One of the obstacles to acceptance of financial need analysis by some graduate school deans has been the inclusion of parental income and assets in the formulae used to gauge the student's available resources. Congress moved unequivocally in the new bill to remove parental resources from consideration when figuring graduate students' needs. It did so with provisions in the new law that make graduate students self-supporting, by definition.

And, because graduate students have such limited personal resources themselves, when the need analysis formulae are applied to their resources, many—if not most—will be able to demonstrate maximum financial need for federal assistance. Thus, while the new bill mandates financial need analysis across-the-board, most graduate students will find that they will be able easily to qualify for federal assistance because their parents will not be expected to contribute toward their educations.

All of this means that graduate student eligibility for federal student aid programs will be expanded because of the new need analysis requirements. It also suggests that you, as deans, may want to monitor the policies and practices of your university's central financial aid office to assure that your graduate students receive their fair share of federal aid administered by that office. Some of you may also want to consider decentralized models of campus financial aid administration, thereby assuring appropriate allocation and distribution of federal financial assistance to your graduate students.

BUSINESS MEETING

Presiding: Lee B. Jones, *Dean of Graduate College, Executive Vice President and Provost, University of Nebraska*
Chairman's Report: Lee B. Jones
President's Report: Jules B. LaPidus, *President, The Council of Graduate Schools in the U.S.*

Lee B. Jones

CHAIRMAN'S REPORT

Dr. Jones recalled that the previous annual meeting had ended with enthusiasm and renewed resolve on the part of CGS in its efforts to represent in Washington graduate education, and to promote graduate education and research in general. The current year has been an active one building on the momentum of the previous year with further evidence of continued development of influence in Washington.

The Board of Directors has met three times (including during the current week). Following are assessments of CGS activities and a summary of major Board actions.

1. The financial health of CGS is good, with adequate reserve funds.

2. Peter Syverson formally joined CGS in January as Director of Information Services. He has moved aggressively to develop a data base for graduate education. Dr. Jones reminded the membership that a good portion of the dues increase they had approved last year was to expand this CGS function that is well on target.

The Data Needs Task Force has provided input for the redesigning of the CGS/GRE Enrollment Survey that is being done in a new collaborative effort. Dr. Jones urged the membership to respond to the survey questionnaire when it is sent to them. It was the consensus of the Task Force on Computers that CGS concentrate on data rather than on computing concerns of the membership.

3. CGS' diligent work on legislative issues relating to tax legislation and reauthorization of the Higher Education bill were commended.

4. The 1986 summer workshop was singled out as one of the best ever.

5. The Membership Committee has reviewed categories of CGS membership and will be proposing revisions to the Bylaws of the Constitution.

6. The Task Force on Publications report to the Board recommended updating, reprinting or discontinuing various CGS publications.

7. The report of the Task Force on Technology and Scholarly Communication was presented to the Board, as a result of which the Board voted to organize the plenary session that was presented at the current meeting.

8. The report of the Task Force on Minorities in Graduate Education was

received and unanimously approved by the Board. The idea of having a minority dean in residence that had originated at the December 1985 GPOP Directors meeting and was proposed for implementation by the task force will be initiated for the 1987–88 year, a grant having been made by the Ford Foundation to assist in the funding of this effort. Other recommendations of the task force include: data collection; publishing a guide book on minority recruitment; having a professional editor for a booklet on the nature of graduate education and the opportunities for earning advanced degrees; giving high priority to recruitment, retention and support of minority graduate students; appointing a standing Committee on Minority Graduate Student Affairs; a general statement that CGS through its national platform get to students in their undergraduate days; focusing on minorities by the entire graduate school staff; the collection and reviewing of statistics of minority graduate students on campuses.

Dr. Jones concluded his report by publicly stating and emphasizing the Board's strong support and satisfaction with CGS President LaPidus and his staff. CGS is in good hands, its financial base is firm (for at least the next 3–4 years), and its future is bright.

Jules B. LaPidus

PRESIDENT'S REPORT

My remarks this year will be brief and devoted primarily to describing some of our activities during the year and some of our proposed activities in the future.

1. Inter-Association Activity

We have been quite involved during the past year in two major inter-association activities. One has been in conjunction with AAU/NASULGC/AASCU/NAICU/ACE. This activity has to do with the issue of earmarking of federal funds for research facilities and you have probably heard about it as the "Langenberg Committee." The issue is difficult and complicated, particularly with respect to the role of the associations since the members are essentially autonomous and can do pretty much as they please in matters of this kind. At the same time, the associations are trying to convince their members to look broadly at the entire issue of federal funding for research and at the long-term consequences of the earmarking approach in contrast, for example, to the approach of supporting competitive national programs for research facilities. The Langenberg Report will be ready soon and will be transmitted to all of our members and to our Board.

We are continuing our activities with AACTE in the area of graduate education for teachers. We have 15 institutions representing a broad spectrum of graduate and teacher education and have been bringing together the graduate dean,

arts and sciences dean, and education dean from each of these schools to discuss issues of graduate education of teachers. This will be a continuing important activity for the Council.

In addition to the two specific activities mentioned above, of course, we work every day with our colleagues at One Dupont Circle and form what we hope are effective coalitions to represent the views of the graduate education community on a host of national and international issues. During this past year, much of our activity has been devoted to the tax bill and the implications of new tax legislation on graduate students. Thomas Linney has done a marvelous job of leading this effort with respect to the issue on scholarships and fellowships. I am sure all of you have benefitted from reading his lucid series of tax memos. We have not heard the last of this issue and we will continue to keep you informed.

2. Activities for 1987

a. A good deal of our attention in 1987 will be devoted to the issue of minorities in graduate education. As you know, we have received a grant from the Ford Foundation to help support a new dean in residence position at CGS. This expansion in staff will allow us to devote more attention to the issues having to do with this important topic. We hope during 1987 to do a lot of coalition building with other organizations involved in some part of the graduate education world that deals with minorities. Among those organizations are AGS, ACE, AAAS, the GEM program, the Patricia Roberts Harris program, the MARC program, the Ford Foundation, the NSF, the National Academy of Sciences, the GRE, the Committee on Institutional Cooperation, and so on. CGS is in a natural position to serve as a national coordinating organization for these groups to try to make sure that we all know what we are doing, where we overlap, and where the gaps are. In addition, we will be developing some publications designed specifically to provide better information about minorities in graduate education.

b. The CGS Office of Information Services, ably led by Peter Syverson, has been working hard on the development of the enrollment survey. Very soon you will be receiving a new survey which will ask for considerably more information than we have ever asked you for before. I urge you to respond to this survey so that we can develop the kind of national data base for graduate education that we need to do our job in Washington and that you need to help you on your campuses.

c. As I mentioned earlier, we will be continuing to monitor issues having to do with the tax law, particularly in regard to implementation of new sections of the law. We are optimistic that we can get clarifications that will materially assist with your offices and graduate students as we enter this first difficult year of the new tax law. We also will be devoting a considerable amount of time to the budget. We will be in touch with you, primarily through the *Communicator*, during the year as our activities go forward.

d. We will be putting together the planning phase of our national study of the master's degree and a year from now hope to come back to you with a specific proposal. As I noted the other day at our session on the master's degree, this level of graduate education is what characterizes all of our institutions. We all are involved with master's degrees and we need to produce a definitive statement about the nature of this level of graduate education. Our project will be designed to do that.

3. It is a pleasure for me to acknowledge at this national meeting that we have received from Ruth Arlt several mementos. One is the flag that flew over the U.S. Capitol on June 25, 1965, the day that the House Committee on Education and Labor reported out the Arts and Humanities Bill. As many of you know, Gus Arlt, our first president, was instrumental in getting that bill through the House and he obtained this flag as a memento of that occasion. In addition, Mrs. Arlt has also given to CGS the pen used by Lyndon Johnson on September 29, 1965 to sign Senate Bill #1483 establishing the National Foundation on the Arts and Humanities and also a pen used by Lyndon B. Johnson on October 16, 1964 to sign Senate Bill #3060 to amend and extend the National Defense Education act of 1958. Gus Arlt was involved in all of these activities and we are delighted to accept these gifts from Mrs. Arlt.

4. Finally let me announce that this year we have several new members—Carnegie Mellon, the College of New Rochelle, the University of California, Santa Cruz, the University of North Carolina, Wilmington, the University of Nebraska Medical Center, and California State University, Bakersfield. In addition, Peterson's Guides joins Research Corporation, University Microfilms International, and the Educational Testing Service as a sustaining member and the du Pont Company has become a contributing member. We welcome all of them to CGS membership.

We are now at the end of the 26th annual meeting of the Council of Graduate Schools. I want to take this opportunity to thank my colleagues in the CGS office, the CGS Board, and most particularly, all of the members of the Council of Graduate Schools, for your support and encouragement which makes it possible for us to do our jobs. CGS is a strong organization and gets stronger each day because of the active support of its members. I look forward to seeing you all in Washington next year.

THE COUNCIL OF GRADUATE SCHOOLS
IN THE UNITED STATES

Financial Report for Years Ended December 31, 1986 and 1985

We have engaged Grant Thornton, nationally recognized certified public accountants, 1850 M Street, N.W., Washington, DC 20036 to perform an audit in 1985 and a review in 1986 of The Council of Graduate Schools in the United States. Summarized financial data is provided below. This recapitulation is not a complete presentation of the reports of Grant Thornton and does not contain all the data and informative disclosures required by generally accepted accounting principles.

BALANCE SHEETS

ASSETS

	1986	1985
Current assets	$602,785	$512,225
Fixed assets, less accumulated depreciation	20,028	19,421
Endowment fund investments	18,012	18,012
	$640,825	$549,658

LIABILITIES AND FUND BALANCES

Current liabilities	$197,205	$122,572
Fund balances		
Unrestricted		
General operating fund	425,608	409,074
Restricted		
Endowment fund	18,012	18,012
Total fund balances	443,620	427,086
	$640,825	$549,658

STATEMENT OF REVENUES, EXPENSES AND CHANGES IN FUND BALANCES

Revenue	$641,405	$525,092
Expenses		
Personnel	309,276	238,918
Research, meetings and travel	210,060	143,636
Office expenses	103,345	90,554
Gustave O. Arlt Award expenses	2,190	1,878
	624,871	474,986
Excess of revenues over expenses	16,534	50,106
Fund balances at beginning of year	427,086	376,980
Fund balances at end of year	$443,620	$427,086

Officers and Board of Directors—1986

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David S. Sparks, Chairman-Elect, University of Maryland
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Victoria A. Fromkin, University of California, Los Angeles (1987)
Robert T. Holt, University of Minnesota (1987)
Gillian Lindt, Columbia University (1988)
William S. Livingston, University of Texas at Austin (1986)
William H. Macmillan, University of Alabama (1988)
Albert W. Spruill, North Carolina A&T State University (1987)
Clarence L. Ver Steeg, Northwestern University (1986)
Vivian A. Vidoli, California State University, Fresno (1986)
Jules B. LaPidus, Ex Officio, Council of Graduate Schools

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Michael Malone, Montana State University, Western Association of Graduate Schools
Suzanne Reid, Western Illinois University, Mid-Western Association of Graduate Schools
Leslie M. Thompson, Texas Woman's University, Conference of Southern Graduate Schools

COMMITTEES AND TASK FORCES—1986–87
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Gillian Lindt, Columbia University, Chair
Robert Carrubba, University of North Carolina at Charlotte
Catherine Lafarge, Bryn Mawr College
Richard Schwartz, Georgetown University

CGS/University Microfilms International Dissertation Award Committee
Field for 1986 - Social Sciences

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David Kaplan, Brandeis University
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Michael Malone, Montana State University
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Nominating Committee (1986)
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William J. Cooper, Jr., Louisiana State University
Shirley Menaker, University of Oregon
Clarence Ver Steeg, Northwestern University

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Lee B. Jones, University of Nebraska, Lincoln
George G. Karas, Iowa State University
Madelyn M. Lockhart, University of Florida
William H. Macmillan, University of Alabama
Allan G. Marr, University of California, Davis
John P. Noonan, Kansas State University
Ann M. Spearing, University of Vermont

Task Force on Computers in Graduate School Administration

Christopher N. Oberg, Claremont Graduate School, Chair
Jean E. Girves, Ohio State University
Frank Goldberg, Northwestern University
Terry Mikiten, University of Texas Graduate School of Biomedical Sciences at San Antonio

Task Force on Governmental Relations

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Helen S. Cairns, Queens College
Russell Hamilton, Vanderbilt University
Robert Holt, University of Minnesota
Dean Jaros, Colorado State University
Robert B. Lawson, University of Vermont
Kenneth Roozen, University of Alabama

Task Force on Minorities in Graduate Education

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Sarita E. Brown, University of Texas at Austin
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Trevor L. Chandler, University of Washington
Clara Sue Kidwell, University of California, Berkeley
Roy Koenigsknecht, Ohio State University
Chau T. M. Le, University of Notre Dame
Noe T. Lozano, Stanford University
William McHenry, Mississippi State University
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Task Force on Technology and Scholarly Communication

David Sparks, University of Maryland, Chair
Roger Clark, Committee for Institutional Cooperation
James Clayton, University of Utah
Philip Manire, University of North Carolina
Linda Mantel, City College of CUNY
Herbert Morton, Office of Scholarly Communication
Allen Sanderson, University of Chicago
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Regional Associations of Graduate Schools Affiliated with the Council of Graduate Schools in the United States

Conference of Southern Graduate Schools

Officers 1986

Carl D. Riggs, President, University of South Florida
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Arnold E. Schwartz, Secretary-Treasurer, Clemson University
Leslie M. Thompson, Past President, Texas Woman's University

Executive Committee 1986

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Clyde Hendrick, (1989), Texas Tech University
William L. Lester, (1987), Tuskegee University
Madelyn L. Lockhart, (1989), University of Florida
Raymond P. Lutz, (1988), University of Texas at Dallas
Mary W. Martin, (1989), Middle Tennessee State University
J. D. Memory, (1988), North Carolina State University at Raleigh
C. W. Minkel, (1988), University of Tennessee at Knoxville
X. J. Musacchia, (1987), University of Louisville
Charles U. Smith, (1987), Florida A & M University
Sue A. Sommer, (1988), College of Charleston
Bernard T. Young, (1989), Angelo State University

Midwestern Association of Graduate Schools

Executive Committee 1986

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Eric Rude, Past Chairman, University of Wisconsin-Madison
Margaret Gessaman, Chairman-Elect, University of Nebraska-Omaha
Dean Jaros, Member-at-Large, Colorado State University
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Officers 1986

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Harry Rubinstein, President-Elect, University of Lowell
Sister Anne L. Clark, Secretary-Treasurer, The College of Saint Rose
Howard B. Palmer, Member-at-Large, Pennsylvania State University
Stephen J. Reno, Member-at-Large, University of Southern Maine
Richard B. Schwartz, Member-at-Large, Georgetown University
Ann M. Spearing, Member-at-Large, University of Vermont

Western Association of Graduate Schools

Officers 1986

A. Charlene McDermott, President, City College, City University of New York
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Lee Shannon, Member-at-Large, University of California-Riverside
William G. Spitzer, University of California, Los Angeles

The Constitution of the Council of Graduate Schools in the United States
(as revised January, 1984)

1. Name

This organization shall be called the Council of Graduate Schools in the United States, hereinafter referred to as the "Council."

2. Purpose

The Council is established to provide graduate schools in the United States with a comprehensive and widely representative body through which to counsel and act together.

Its purpose is the improvement and advancement of graduate education. The purview of the Council includes all matters germane to this purpose. The Council shall act to examine needs, ascertain best practices and procedures, and render assistance as indicated; it may initiate research for the furthering of the purpose. It shall provide a forum for the consideration of problems and their solutions, and in meetings, conferences, and publications shall define needs and seek means of satisfying them in the best interests of graduate education throughout the country. In this function the Council may act in accordance with the needs of the times and particular situations to disseminate to the public, to institutions, to foundations, to the federal, state, and local governments, and other groups whose interest or support is deemed of concern, information relating to the needs of graduate education and the best manner of satisfying them.

In the analysis of graduate education, in the indication of desirable revision and further development, in the representation of needs and all other functions related to effecting its purpose, the Council not only shall be free to act as an initiating body, but it shall assume direct obligation for so doing.

3. Membership

Membership in the Council of Graduate Schools in the United States shall be limited to two categories: Regular and Sustaining. All members shall be aware that the Council is devoted to excellence in graduate education as interpreted by occasional position statements outlining philosophies, policies, and procedures of graduate education. Applicants for membership shall display evidence as to qualifications in a form and as otherwise prescribed by the Council. All applications will be reviewed and evaluated by the Council's Membership Committee, which will bring its recommendations to the Executive Committee for action.

A. *Regular Membership.* Institutions of higher education in the United States which are significantly engaged in graduate education, research, and scholarship, and the preparation of candidates for advanced degrees are eligible for Regular Membership. Applicant institutions must already have been approved to offer graduate work by the appropriate regional accrediting association, and shall have awarded at least thirty master's degrees or ten doctoral degrees (or combination thereof) in at least three distinct and separate fields or disciplines within the three years immediately prior to the date of application. Applicant institutions must also have a formally organized administrative unit responsible for graduate affairs.

Each application for membership shall contain evidence as to these qualifications in a form prescribed in the Bylaws.

B. *Sustaining Membership.* Both profit and nonprofit organizations such as research institutes; testing and evaluation corporations: philanthropic and charitable organizations; federal, regional and state agencies; public and private research and development corporations; and foreign and multinational organizations are eligible for Sustaining Membership. Such organizations must recognize the value of quality graduate education across a broad range of scholarly, technological and creative endeavors. Through their participation and membership dues they help the Council carry out its central mission and purpose, while gaining access to its resources and activities.

Sustaining Members are encouraged to interact and communicate with Regular Members both informally and formally. Sustaining Members may attend CGS meetings and other sponsored functions; however, they do not have voting rights nor are they eligible to hold elected CGS office.

They are listed in the annual CGS Directory and receive the same generally distributed information and material as Regular Members. Appropriate annual membership dues will be levied by the Council (see Article II).

CGS neither endorses nor represents the interests of Sustaining Members, explicitly or implicitly.

Applications for Sustaining Membership shall be made in form prescribed by the Bylaws. Each applicant will be considered by the Membership Committee in light of the Purpose (Article 2) of the Council.

4. Voting Power

In all activities of the Council, each regular member institution shall have one vote. More than one representative of any institution may attend the meeting of the Council, but the member's vote shall be cast by the individual designated as the principal representative of the member by the chief administrative officer of the member institution.

5. Officers and Board of Directors

The officers of the Council and the Board of Directors shall be a Chairman, a Chairman-Elect, and the immediate Past Chairman, each serving for a term of one year. In the absence of the Chairman, the Chairman-Elect shall be presiding officer of the Board of Directors and the Council.

There shall be a Board of Directors of twelve voting members, composed of the Chairman, the Chairman-Elect, the Past Chairman and nine members-at-large. Three members-at-large shall be elected annually by the members of the Council in the manner specified in Article 8 for terms of three years which begin immediately after the Annual Meeting.

The Chairman-Elect, chosen by the Board of Directors from its own past or present membership, shall serve in that capacity for one year. The following year the Chairman-Elect will assume the office of Chairman, and the following year, the office of Past Chairman.

Each voting member of the Board of Directors must be the principal representative of an institutional member of the Council and none may serve for two consecutive full terms.

If the Chairman is unable to continue in office, the Chairman-Elect shall succeed immediately to the Chairmanship, and the Board of Directors shall choose a new Chairman-Elect.

Any vacancy occurring among the membership-at-large of the Board of Directors shall be filled in the manner specified in Article 8. In the interim, the position shall be filled by an appointee of the Board of Directors.

6. Executive Officers

The chief executive officer of the Council shall be a President, who shall be a salaried officer, appointed by the Board of Directors and serving at its pleasure. The President shall serve as an ex-officio member of the Board of Directors without a vote.

7. Duties and Power of the Board of Directors

In addition to the duties and powers vested in the Board of Directors elsewhere in this Constitution, the Board of Directors may specifically employ such staff and establish such offices as may seem necessary; incorporate; undertake itself, or through its agents, to raise funds for the Council and to accept and expend monies for the Council; take initiative and act for the Council in all matters including matters of policy and public statement except where limited by this Constitution or by actions of the Council.

8. Committees

In addition to the Board of Directors, there shall be an Executive Committee of the Board of Directors, a Nominating Committee, a Committee on Member-

ship, whose members shall not be members of the Board of Directors, and such other standing committees as may be established by the Board of Directors.

Except for the Executive Committee and the Nominating Committee, all standing committees and ad hoc committees shall be appointed by the Chairman with the advice and consent of the Board of Directors. Committee membership shall be limited to regular members of the Council.

The Executive Committee shall consist of the Chairman, Past Chairman, and Chairman-Elect and two other Board members elected annually by the Board of Directors. The President of the Council shall be an ex-officio member of the Executive Committee.

To the extent determined by the Board, the Executive Committee shall have the authority of the Board in the management of the affairs of the Council in the intervals between meetings of the Board. The actions of the Executive Committee shall be reported at the next meeting of the Board of Directors.

The Nominating Committee shall consist of five new members each year of whom three shall be elected by the members of the Council. Two shall be members of the Board of Directors. The Chairman of the Committee shall be the Past Chairman of the Board. The one other Board member shall be elected by the Board from its members-at-large who shall be in the last year of their terms.

At least sixty-one days before each Annual Meeting of the Council, the Nominating Committee shall propose to the members of the Council two nominees for each member-at-large position of the Board of Directors to be filled including residual terms of vacated positions, and two nominees for each member-at-large position of the Nominating Committee. These nominations shall be made only after suggestions accompanied by supporting vitae have been solicited from the membership-at-large.

The election will then be held by mail ballot and the nominees receiving the larger numbers of votes for the positions to be filled shall be declared elected. In case of a tie vote, the Nominating Committee shall break the tie.

9. Meetings

The Council shall hold an Annual Meeting at a time and place determined by the Board of Directors. The Council may meet at other times on call of the Board of Directors.

The Board of Directors shall be responsible for the agenda for meetings of the Council. Reports and proposals to be submitted for action by the Council shall be filed with the Board of Directors before they may be submitted for general discussion by the Council. No legitimate report or proposal may be blocked from presentation to the Council, but action on any proposal may not be taken until the Board of Directors has had an opportunity to make a recommendation.

In matters not provided for in this Constitution, parliamentary procedure shall be governed by Robert's Rules of Order, Revised.

10. Limitations of Powers

No act of the Council shall be held to control the policy or line of action of any member institution.

11. Dues

Membership dues shall be proposed by the Board of Directors and must be approved by the majority of the membership after due notice.

12. Amendments

Amendments to this Constitution may be proposed by the Board of Directors or by written petition of one-third of the members. However they originate, proposals for amendments shall be received by the Board of Directors and forwarded with recommendations to the members, in writing, at least ninety days before the meeting at which they are to be voted upon or before formal submission to the members for a mail ballot. To be adopted, proposed amendments must receive the approval of a two-thirds majority of the members voting at the announced meeting or on the designated mail ballot.

13. Bylaws

Bylaws may be established by the Board of Directors at any regular or special meeting, subject to ratification by a simple majority vote of the Council at the next Annual Meeting.

BYLAWS

1. In conformity with Article 6 of the Constitution, the President of the Council of Graduate Schools in the United States shall be paid an annual salary to be determined by the Board of Directors plus such perquisites as may be necessary for the proper conduct of the office and such travel as may be deemed essential. The President is authorized to employ such personnel as necessary for the proper conduct of the office, to establish bank accounts in the name of the Council of Graduate Schools in the United States, and to draw checks and invest monies against the Council's account or accounts, subject to an annual audit of the books of the Council by a Certified Public Accountant and approval by the Board of Directors.
2. Depositories for funds of the Council shall be designated by the Board of Directors.
3. In the event of the dissolution of the Council of Graduate Schools, all then existing assets of the Council shall be distributed in equal parts to the institutions which will at the time be members of the Council.

4. The fiscal year of the Council will correspond to the calendar year.
5. In the event of the death or disability of the President of the Council, the Chairman shall immediately call a meeting of the Board of Directors to select an Acting President, who shall assume the responsibilities of the President, as they are specified in Article 6 of the Constitution and in Bylaws 1 and 2, until the appointment of a new President.
6. Regular membership applicants responding to Section 3 of the Constitution are expected to furnish statements endorsed by the chief executive officer and the chief graduate officer of their institution. These statements should include information as to the following:
   a) The institution's accreditation for graduate work as determined by the appropriate regional accrediting association.
   b) The number of graduate degrees awarded in the three years immediately preceding the application for each applicable field or discipline in which graduate degrees are awarded.
   c) A general description of the criteria used in determining faculty participation in graduate programs, i.e., the level of training and the scholarly/creative productivity of the faculty members in the institution's graduate program.
   d) The degree of centrality of graduate education to the nature and purpose of the institution as evidenced by its budgetary commitment to graduate programs, the existence of special facilities or resources in specific support of graduate education, and, in the case of appointments, promotion and tenure, the degree of importance placed on faculty contributions to graduate and scholarly/creative work.
   e) The extent of the institution's acceptance of existing Council policy statements setting forth standards for the organization of graduate study.
7. Materials and information requested from the chief administrative officer of organizations applying for Sustaining Membership should include a statement of the aims and objectives of their organization; a statement of interest in graduate study; documentation of engagement in or commitment to research and development, creative expression, or the exploration of ideas; characterization of the educational level and achievements of the organization's professional staff; identification of affiliations with other associations or institutes relevant to graduate education; and a statement showing prior support of higher education.

   Applicant organizations must have been in existence for a period of time sufficient to establish the above commitments.

   Applicants agree to accept existing Council policy statements setting forth standards for graduate study and allied concerns.
8. A regional organization of graduate schools which becomes associated with the Council of Graduate Schools in the United States shall be known as CGS affiliate. Eligibility for CGS affiliate status is limited to a) existing regional organizations of graduate schools or b) any such organizations subsequently

established and having membership of at least 50 institutions. An eligible organization becomes a CGS affiliate upon approval by CGS's Board of Directors of a letter from a duly authorized officer of that organization stating its intent to become an affiliate. No fee is required to become a CGS affiliate. Formal participation of the regional associations in CGS shall be provided through the Board nomination and election process in such a way that a representative of at least one institution in each of the affiliated regional associations, who otherwise meet CGS's constitutional requirements for Board membership, is a member of the Board. One such member may then be designated by each affiliate as its liaison member, who shall have, as an extra responsibility beyond that of regular Board membership, to communicate information and views between the Board and the officers of the affiliate. (Alternatively, a regional organization which is an affiliate of the Council may designate as its liaison representative an individual who is not a Board member.) Such communication does not preclude direct communication between CGS and officers of the affiliates. A liaison member may or may not be an officer of the affiliate and is free to act on any Board decision independent of any position described by his or her affiliate. In determining any joint position held by CGS and its affiliates, the governing bodies of each must have adopted such a position through their own procedures. When agreement has been reached, CGS shall be able to represent the position as one held in common by CGS and its affiliates.

Section 10 of the Constitution of CGS shall apply to any such determination.

PROCEDURAL POLICIES

1. Annual meetings of the Council shall be held during or near the first week of December.
2. If a member resigns, it must reapply for admission in the normal way if it wishes to resume membership.
3. Institutions accepted to membership in any given year are required to pay prorated dues on a quarterly basis for that fiscal year.

Alphabetical Listing of Member Institutions

Abilene Christian University
Adelphi University
Air Force Institute of Technology
Alabama A&M University
Alfred University
*American University, The
Andrews University
Angelo State University
Appalachian State University
Arizona State University
Arkansas State University
Assumption College
Atlanta University
Auburn University
Austin Peay State University
Ball State University
Baylor College of Medicine
Baylor University
Bentley College
*Boston College
Boston University
Bowling Green State University
Bradley University
*Brandeis University
Bridgewater State College
Brigham Young University
Brooklyn College of CUNY
*Brown University
*Bryn Mawr College
*California Institute of Technology
California State Polytechnic University, Pomona
California State University, Fresno
California State University, Fullerton
California State University, Hayward
California State University, Los Angeles
California State University, Northridge
California State University, Sacramento
California University of Pennsylvania
*Carnegie-Mellon University
*Case Western Reserve University
*Catholic University of America, The
Central Michigan University
Central Missouri State University
Central State University
Central Washington University
Chicago State University
City College of the City University of New York
City University of New York Graduate School and University Center
*Claremont Graduate School, The
*Clark University
Clarkson University
Clemson University
Cleveland State University
College of New Rochelle
College of Notre Dame
College of Saint Rose
College of William and Mary
Colorado School of Mines
Colorado State University
*Columbia University
*Cornell University
Creighton University
Dartmouth College
Drake University
Drexel University
*Duke University
Duquesne University
East Carolina University
East Central University
East Tennessee State University
East Texas State University
Eastern Illinois University
Eastern Kentucky University
Eastern Michigan University

Eastern Washington University
*Emory University
Emporia State University
Fairleigh Dickinson University
Fielding Institute, The
Fitchburg State College
Florida A & M University
Florida Atlantic University
Florida International University
*Florida State University
*Fordham University
Fort Hays State University
Framingham State College
Gallaudet College
Gannon University
George Mason University
*George Washington University, The
*Georgetown University
*Georgia Institute of Technology
Georgia Southern College
Georgia State University
Hahnemann University
Hampton University
Hardin-Simmons University
*Harvard University
Hebrew Union College - Jewish Institute of Religion
Hofstra University
Holy Names College
Howard University
Idaho State University
*Illinois Institute of Technology
Illinois State University
Indiana State University
Indiana University
*Indiana University of Pennsylvania
Inter American University of Puerto Rico
Iona College
*Iowa State University
Jackson State University
James Madison University
John Carroll University
John Jay College of Criminal Justice
*Johns Hopkins University, The
*Kansas State University
Kent State University
Lamar University
*Lehigh University
Lesley College
Loma Linda University
*Louisiana State University
Louisiana State University Medical Center School of Graduate Studies
Loyola Marymount University
*Loyola University of Chicago
Mankato State University
Marquette University
Marshall University
*Massachusetts Institute of Technology
Medical College of Georgia
Medical College of Pennsylvania
Medical College of Wisconsin
Medical University of South Carolina
Memphis State University
Miami University
*Michigan State University
Michigan Technological University
Middle Tennessee State University
Mississippi State University
Montana State University
Montclair State College
Morehead State University
Morgan State University
Murray State University
National University
Naval Postgraduate School
New Jersey Institute of Technology
New Mexico Institute of Mining and Technology
New Mexico State University
*New School for Social Research
New York Institute of Technology
New York Medical College
*New York University
North Carolina Agricultural and

Technical State University
North Carolina Central University
*North Carolina State University at Raleigh
North Dakota State University
North Texas State University
Northeast Missouri State University
Northeastern Illinois University
Northeastern University
Northern Arizona University
Northern Illinois University
Northern Michigan University
Northwestern State University of Louisiana
*Northwestern University
Nova University
Oakland University
*Ohio State University, The
Ohio University
*Oklahoma State University
Old Dominion University
*Oregon State University
Pace University
*Pennsylvania State University, The
*Pepperdine University
Pittsburg State University
Polytechnic University
*Princeton University
*Purdue University
Queens College of the City University of New York
Radford University
*Rensselaer Polytechnic Institute
Rhode Island College
*Rice University
Rochester Institute of Technology
*Rockefeller University, The
*Rutgers-The State University
St. Bonaventure University
*St. John's University
*St. Louis University
St. Mary's University
Salisbury State College
Sam Houston State University
San Diego State University
San Francisco State University
Sangamon State University
San Jose State University
Santa Clara University
Sarah Lawrence College
Seattle University
Shippensburg University
South Carolina State College
South Dakota School of Mines & Technology
South Dakota State University
Southern Illinois University at Carbondale
Southern Illinois University at Edwardsville
Southern Methodist University
Southern University
Southwest Missouri State University
Southwest Texas State University
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Tennessee Technological University
*Texas A & M University
Texas Christian University
Texas Southern University
Texas Tech University

Texas Woman's University
Thomas Jefferson University
Towson State University
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Tufts University
*Tulane University
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*University of Colorado, Boulder
University of Connecticut
University of Dayton
*University of Delaware
*University of Denver
University of The District of Columbia
*University of Florida
University of Georgia
University of Hartford
University of Hawaii at Manoa
University of Health Sciences, The Chicago Medical School
University of Houston-Clear Lake
University of Houston-University Park
University of Idaho
University of Illinois at Chicago
*University of Illinois at Urbana-Champaign
*University of Iowa, The
*University of Kansas, The
*University of Kentucky
University of Louisville
University of Lowell
University of Maine at Orono
*University of Maryland
University of Maryland Graduate School, Baltimore
University of Maryland Graduate School, College Park
University of Maryland Graduate School, Eastern Shore
University of Maryland Graduate School, University College
University of Massachusetts at Amherst
University of Massachusetts at Boston
University of Medicine & Dentistry of New Jersey
University of Miami
*University of Michigan
University of Minnesota
University of Mississippi
University of Missouri, Columbia
University of Missouri, Kansas City
University of Missouri-Rolla
University of Missouri-St. Louis
University of Montana
*University of Nebraska
University of Nevada-Las Vegas

University of Nevada-Reno
University of New Hampshire
University of New Haven
University of New Mexico
University of New Orleans
*University of North Carolina at Chapel Hill
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University of North Carolina at Greensboro
University of North Carolina at Wilmington
*University of North Dakota
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University of Tulsa, The
*University of Utah
University of Vermont
*University of Virginia
*University of Washington
University of Wisconsin-Eau Claire
*University of Wisconsin-Madison
University of Wisconsin-Milwaukee
University of Wisconsin-Oshkosh
University of Wisconsin-Stout
*University of Wyoming
Utah State University
*Vanderbilt University
Villanova University
Virginia Commonwealth University
*Virginia Polytechnic Institute and State University
Wake Forest University
*Washington State University
Washington University
*Wayne State College
Wayne State University
Wesleyan University
West Chester University
*West Virginia University
Western Carolina University
Western Illinois University
Western Kentucky University

Western Michigan University
Western Washington University
Westfield State College
Wichita State University
Worcester Polytechnic Institute
Worcester State College
Wright State University
Xavier University
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